

Plasma One Point Repair 2004

NOTE:

Active links in this document
are outlined in blue.

Contents

- I . Visual repair Index**
- II. Introduction to Plasma**
- III. Service Adjustments**
- IV. Trouble shooting**



60" Known Visual problems with boards that fixed

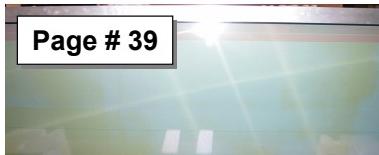
Visual repair Index



Control Board & Y-Driver Amp



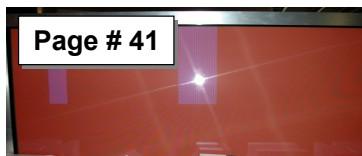
Y- Amp



Y-Driver Amp



Y-Driver Top



Control Board



X-Board upper right

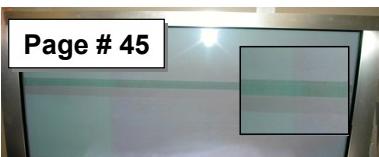
60" Known Visual problems with boards that fixed



Y-Driver - Top



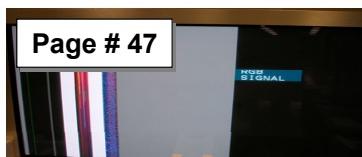
VSC- Board



Y-Driver - Top



VSC- Board



X- Board (Top Right)



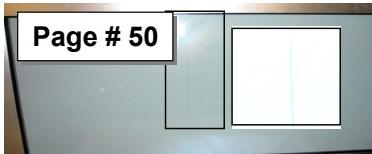
Y-Driver amp and X-Drive Top

50" Known Visual problems with boards that fixed

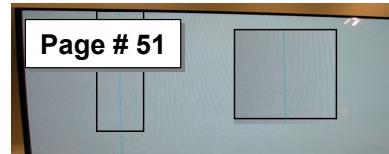
Visual repair Index



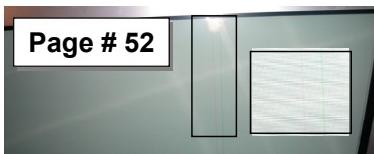
Y-Driver Amp upper



Control board



Control Board



VSC Board



X-Board upper right



Y- Driver Amp bottom

50" Known Visual problems with boards that fixed



X- Board (Lower Right)



X- Board (Lower Left)



Control Board



Y- Driver Bottom



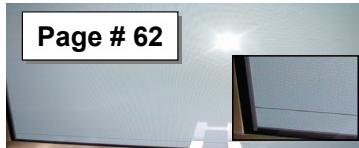
Y- Driver Amp and X-Drive Top



Control Board



Data @ X-Board – Yes/ tested for shorted FOC IC – Ribbon shorted/ Defective Panel



Installed Y- Driver Amp bottom no Change/ Defective Panel



Data @ X-Board – Yes/ tested for shorted FOC IC – Ribbon shorted/ Defective Panel



Display's waves - VSC



Y-Driver - Top

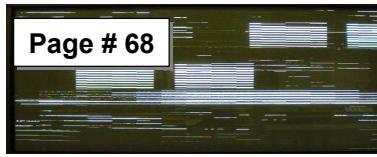


Y-Driver - Top

42" Known Visual problems with boards that fixed



Y-Driver - Top



VSC- Board



Y-Driver - Top



Y-Driver Amp upper

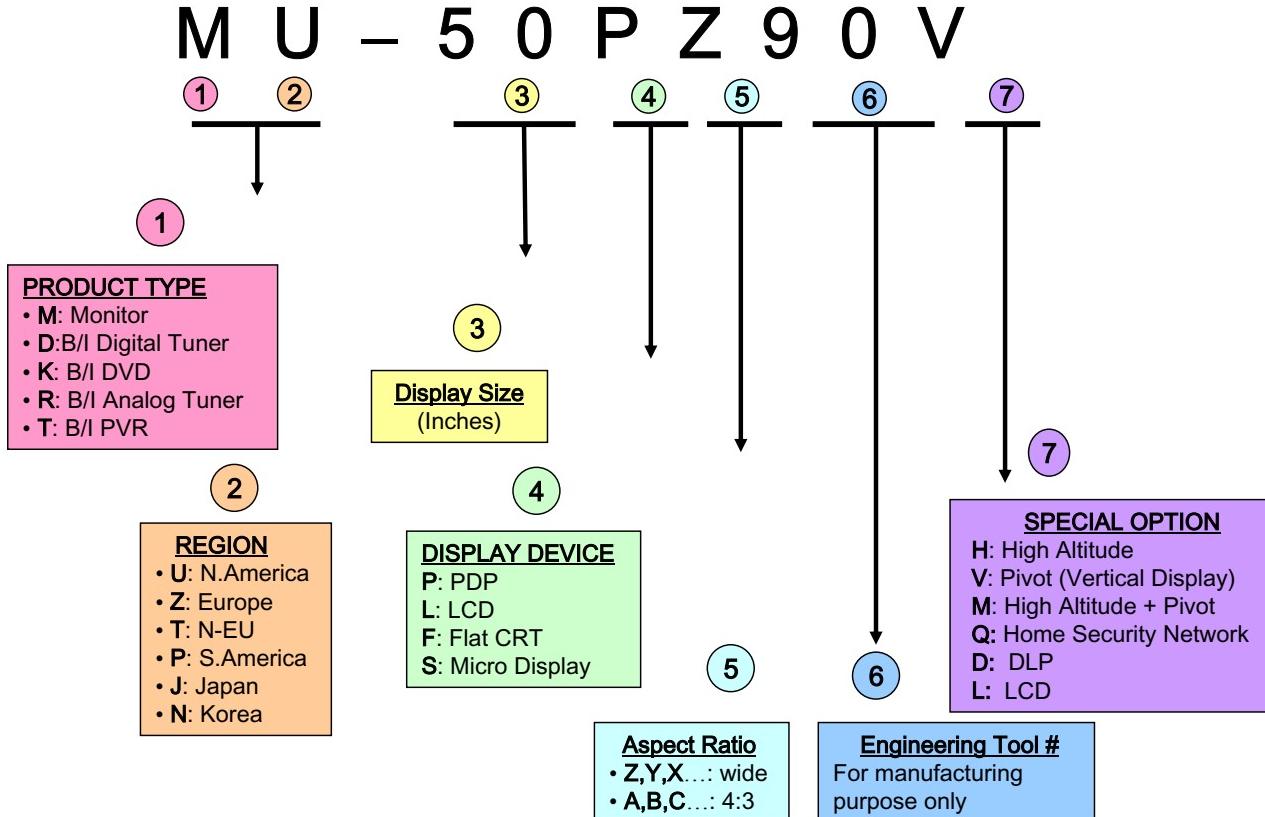


Control board



Control Board

Understanding Model Numbers for LG Display's



Introduction to Plasma

How the power supply works

Voltages for VS: Supplies support to the Y-Amplifier for horizontal grid voltage. If the required voltage is not + or – 3% you may see the following in the picture: lines from side to side or left to right, half picture top or bottom, intermittent shutdown or dead.

Voltages for VA: Supplies support to the Z-Amplifier for vertical grid voltage. If the required voltage is not + or – 3% you may see the following in the picture: Comets, washout, bleeding, intermittent shutdown or dead.

To start to understand plasma one must look for why this voltage is not within specifications. In LG – Zenith line of plasmas there are several power supply set-ups as follows: 60" plasma is made-up of a primary and secondary power supply followed by a DC to DC converter. This is to support the massive current that's required to sustain picture quality.

The 50" and 42" plasma power supplies are consolidated into one board. In the 60" anyone of the three parts could be out of adjustment. In the fifty and forty two the voltages need to be still verified in chronological order. In most cases if your facing a dead set scenario this is caused by a shorted Y or X-driver board.

Testing for defective Y-drive boards can be done by looking for a voltage drop if this is located in the Y-sustain disconnect power and remove one Y-driver boards at a time until Y-sustain voltage is accurate. If Y-sustain does not respond with proper voltage supplied replace. Testing for defective X-driver boards can be done by powering down and disconnecting each X-driver and powering on each quadrant at a time.

Pulse Frequency Coefficient: (PFC) adjustment is Located the primary supply and is for aligning grid voltage. The panels grid voltage averages 360 to 380 volts depending on panel circuit.

Known symptoms:

No Power
Intermittent Power
Picture dimming to bright during certain scenes
Primary colors off, Hue or flesh tones
Colors bleeding
Left to Right picture is dark to bright

Introduction to Plasma

1. X B/D

Receiving LOGIC signal from CONTROL B/D to make ADDRESS PULSE generating address discharge by an ON/OFF operation, and supplies this waveform to COF IC (data) or ribbon IC.

X B/D



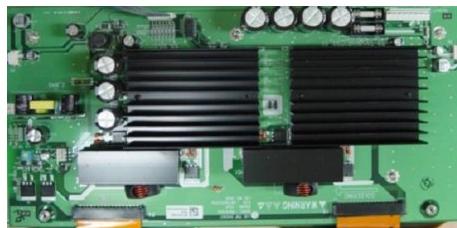
2. Z sustain B/D

Responsible for making SUSTAIN PULSE and ERASE PULSE that generates SUSTAIN discharge in panel by receiving LOGIC signals the CONTROL B/D.

The Sustain discharge waveform is supplied to panel through FPC (Z B/D).

Composed of IPM, FET, DIODE, electrolytic capacitor, E/R coil.

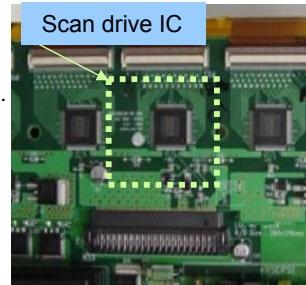
Z B/D



Y SUB-AMP B/D

3. Y drive B/D

- 1) This is a path to supply SUSTAIN ,RESET waveform which is made from Y SUSTAIN B/D to panel through SCAN DRIVER IC.
- 2) Supplies the waveform that selects Horizontal pulse (Y SUSTAIN pulse) sequentially.
 - Potential difference is 0V between GND and Vpp of DRIVER IC in SUSTAIN period.
 - Generated potential difference between GND and Vpp only in SCAN period.
 - E/R (Energy recovery)
 - COF (Chip On Film)
 - IPM (Intelligent Power Module)



Introduction to Plasma

4. Y sustain B/D

Generates SUSTAIN, RESET waveform, VSC (SCAN) voltage and supplies it to the Y DRIVER B/D.

Composed of IPM, DIODE, electrolytic capacitor, FET.

Y-AMP B/D



DIG CONTROL B/D



Z-APM B/D



6. IPM (Intelligent Power Module)

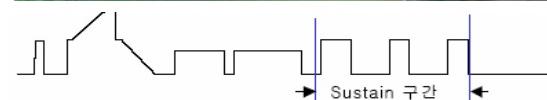
Connected to Z B/D and Y B/D, making Sustain waveform.

Sustaining and supplying a square wave to panel, creating video.

Composition

CAPACITORS/ DIODES/ IC LINEAR/ RESISTORS, TRANSISTORS and FETS.

- E/R (Energy recovery)
- IPM (Intelligent Power Module)



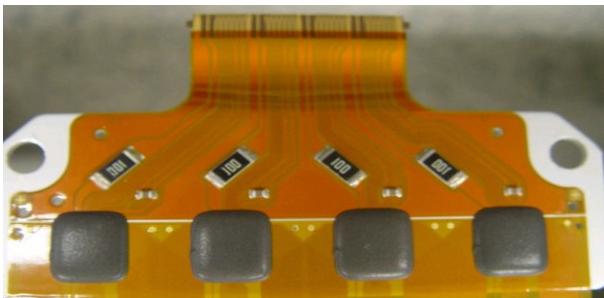
Introduction to Plasma

7. Ctrl B/D

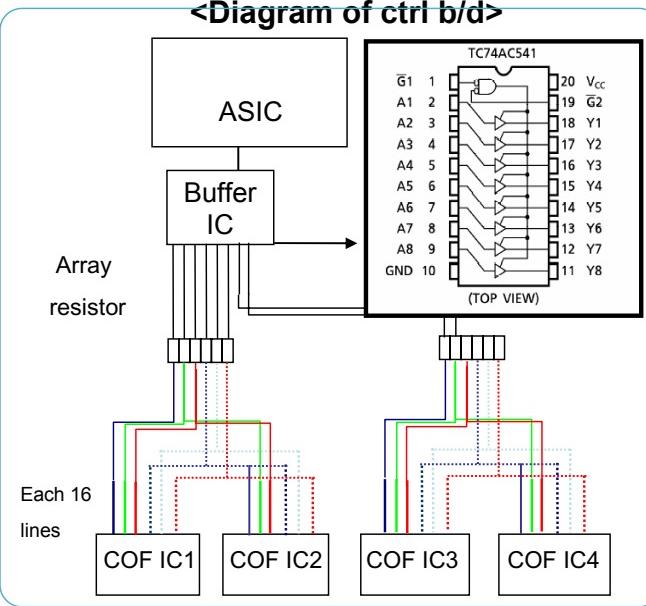
CTRL B/D supplies video signal to COF. So if there is a bar defect on panel this may be the ctrl b/d creating this problem.

Flow, address signal

In the figure to the right shows data path to COF IC In this description you can see how missing data can affect the panel.

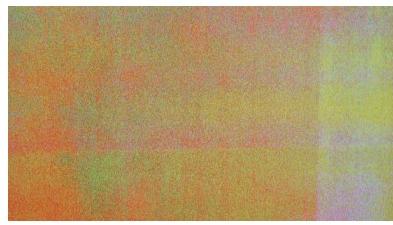


<Diagram of ctrl b/d>

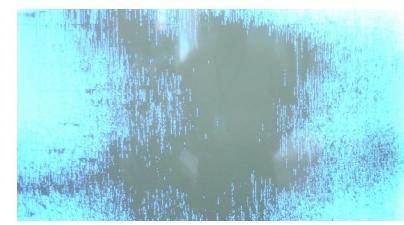


8. Checking order

1. Confirm Y, Z SUS signal cable.
2. Check Y DRV IC FAIL
3. Check Y sus b/d voltages (-Vy.Vscw)
4. Check Y ,Z-SUS IPM fail
5. Replace CTRL b/d



A. Mal-discharge problem Y-drive, Z -b/d.



B. Check VA and VS Voltage if occurred.

Introduction to Plasma

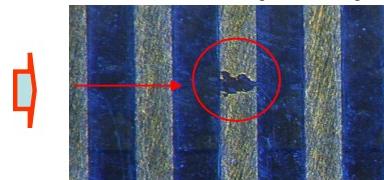
9. Check FPC

In case of horizontal 1 or more line, it is due to FPC or panel inside .ctrl b/d, Y b/d is just normal. First , clean the FPC electrode with a cloth to clean off the ribbon connection removing particles.

Horizontal line.



COF ribbon to panel open



Cell/ break down

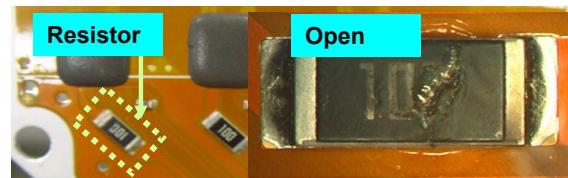


10. Checking address COF input of resistor and IC

► COF resistor check

Check the both side of resistor With Digital multi meter(DMM) .

If the resistor is okay, the resistor value should be 10Ω if open replace resistor.

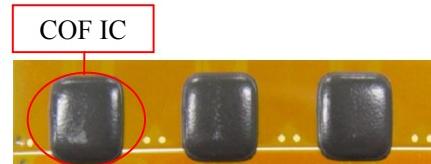


11. COF (Chip On Film)

Supplied with the X B/D waveform to the panel, controls grid & zones by switching on or off the 96 pin COF IC.

— the higher the resolution, the less spare space on the IC.

- E/R (Energy recovery)
- COF (Chip On Film)
- IPM (Intelligent Power Module)



Introduction to Plasma

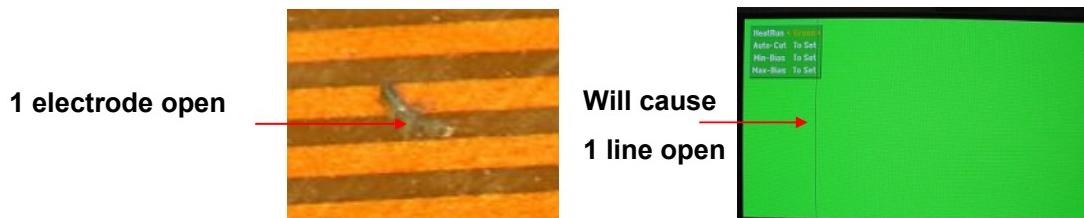
Vertical defect (line)

In case of 1 vertical line or short , check for foreign substances on COF connector.

First clean off the connector with clean cloth to remove foreign substances, Test again, then if the same line appears check for shorted IC, SHORTED replace panel.

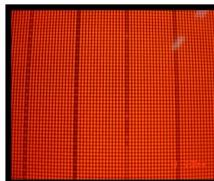
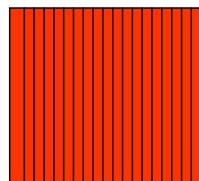
1 line open or short

This phenomenon is due to COF IC inside short or adherence part of the Film and rear panel electrode problem. In this case, replace the panel.

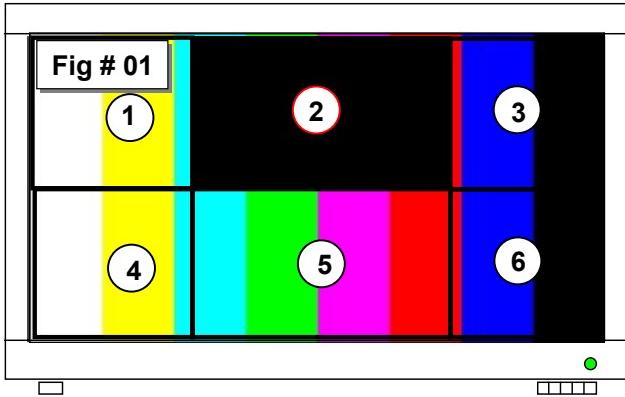


Line open or short with same distance.

This is an ASIC of Ctrl b/d defect. ASIC defective, replace the ctrl b/d.



DA : Data Arranger IC



- 1) Check the related X-Board's power connector.
- 2) Check the signal cable between Controller PCB & X-Board.
- 3) Replace X-Board

Correlation between screen & X Boards

Screen Location

| Screen Location | X Board |
|----------------------|---------------------------------|
| 1) Top left 3/10 | ↔ X Top-right / Bottom-left B/D |
| 2) Center top 2/5 | ↔ X Center Top B/D |
| 3) Top right 3/10 | ↔ X Top-left / Bottom-right B/D |
| 4) Bottom left 3/10 | ↔ X Top-left / Bottom-right B/D |
| 5) Center bottom 2/5 | ↔ X Center Top B/D |
| 6) Bottom right 3/10 | ↔ X Top-right / Bottom-left B/D |

2. Known Tips as to no data and partial display

No image/ Data COF IC.

1) Caused by X Board's having no power or connections.

Data COF is totally or partially not displayed

2) Check the connector between COF IC & X-Board.

3) Data COF IC is defective, replace the related X-Boards.

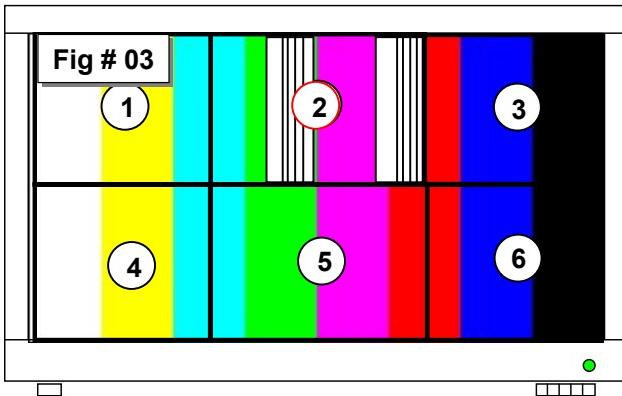
Fig # 02

Examples,



| | |
|--|---------------------|
| | Non-image |
| | Non Image white |
| | Partially displayed |



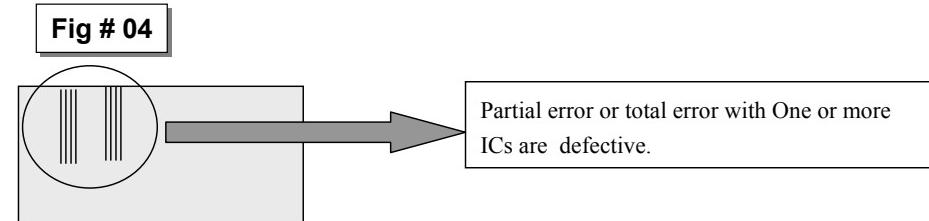


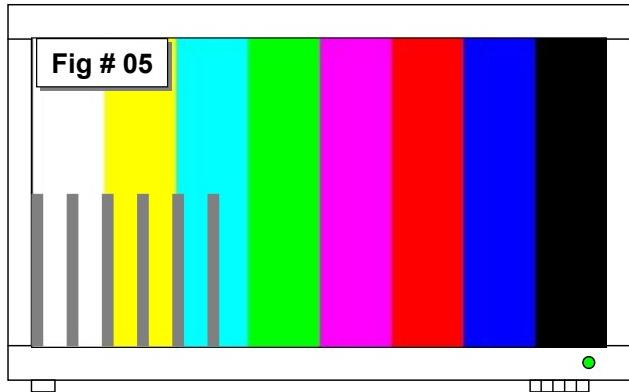
- 1) Check the related X Board's power connector.
- 2) Check the signal cable between Controller PCB & X-Board.
- 3) Replace X-Board

Correlation between screen & X Boards

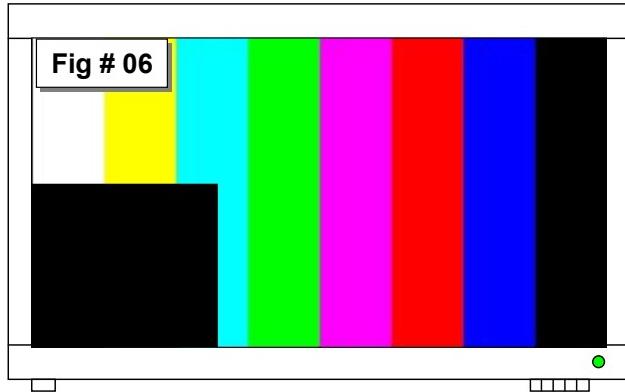
| Screen Location | X Board |
|--------------------------|---------------------------------|
| 1) Top left 3/10 | ↔ X Top-right / Bottom-left B/D |
| 2) Center top 2/5 | ↔ X Center Top B/D |
| 3) Top right 3/10 | ↔ X Top-left / Bottom-right B/D |
| 4) Bottom left 3/10 | ↔ X Top-left / Bottom-right B/D |
| 5) Center bottom 2/5 | ↔ X Center Top B/D |
| 6) Bottom right 3/10 | ↔ X Top-right / Bottom-left B/D |

- 1) This is caused by X Board output IC being defective. When COF ICs have data this means the data transfer between the Controller PCB and X Board is missing.
- 2) Check all related X Board connections.
- 3) Replace that X Board or CTRL PCB or both if needed.

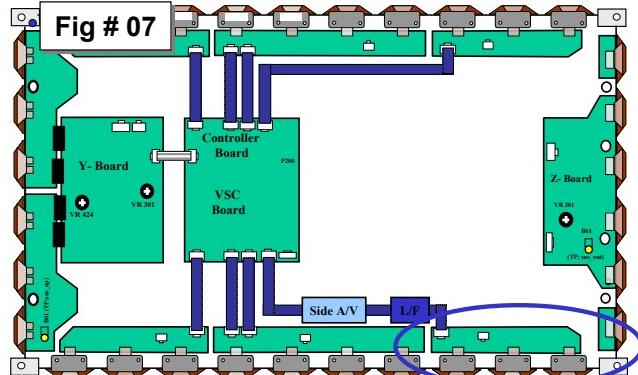
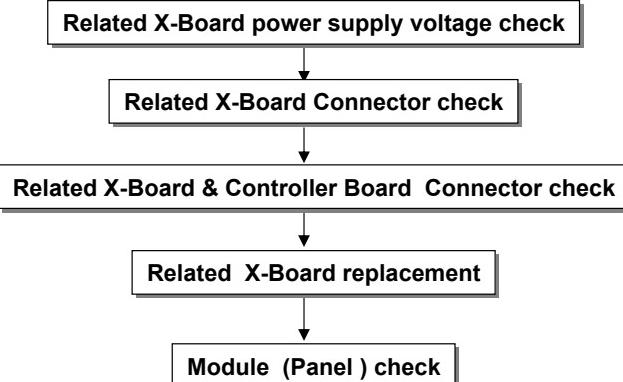




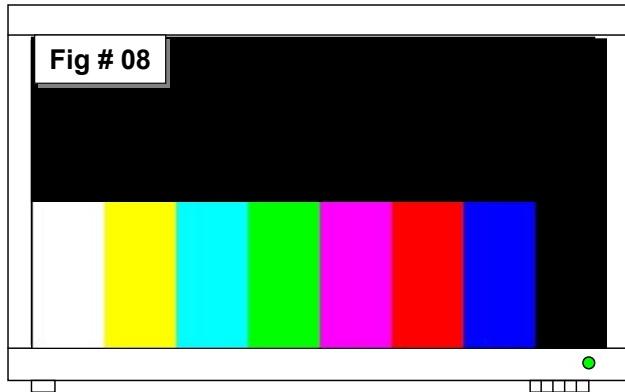
Bottom left 3/10 of the screen with vertical bar



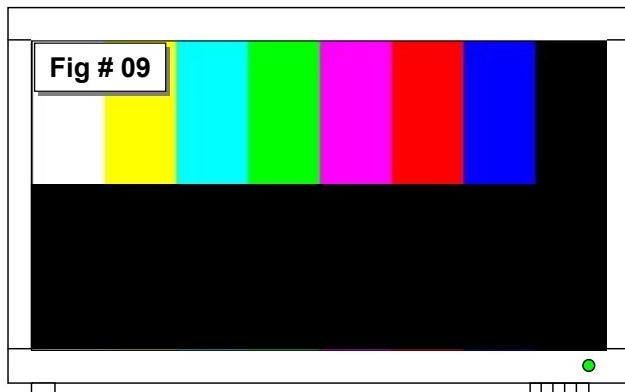
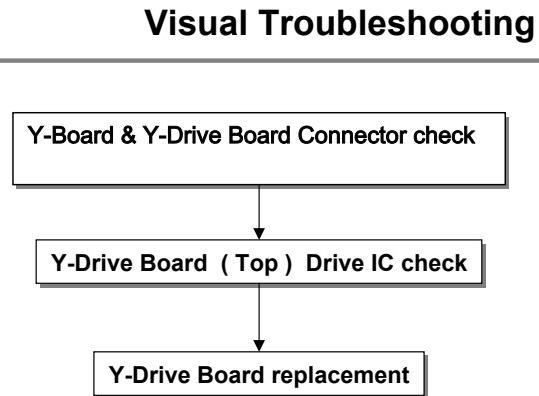
Bottom left 3/10 of the screen with no-picture



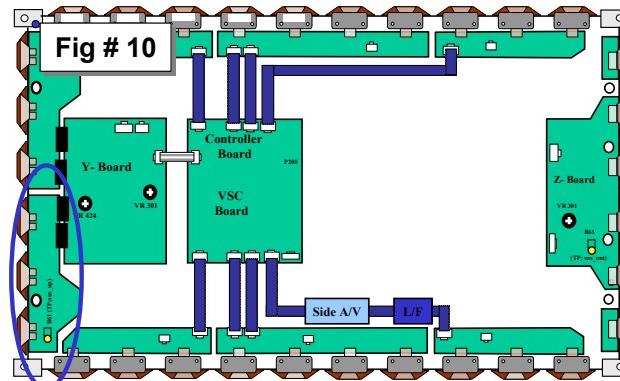
Bar (Horizontal) half -picture



Only bottom Image is Displaying



Only top Image is Displaying

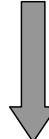
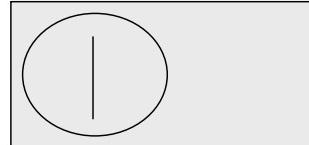


Vertical Lines

Visual Troubleshooting

6. One or more vertical lines in the screen.

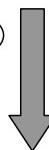
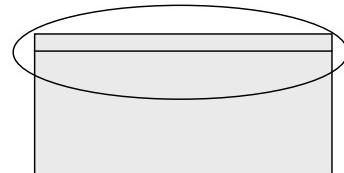
- 1) Irregular vertical line is not related to Controller PCB or X Board.
- 2) It is mainly caused by the followings open (or short).
 - Panel itself defect
 - DATA COF FPC attached to panel is open or short.
 - DATA COF attached to panel itself is defective



There can be several lines in $\frac{1}{4}$ inch wide area.
It can be seen on the both side, right and left.
The area is sometimes over $\frac{1}{4}$ inch wide.

7. One or more horizontal lines in the screen.

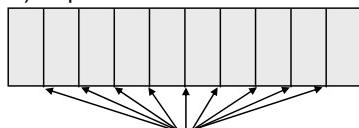
- 1) Irregular vertical line is not related to Controller PCB or Y Board.
- 2) It is mainly caused by the followings open (or short).
 - Y FPC connector \Rightarrow reinsertion
 - Open because of Y Driver Board's connector dry joint \Rightarrow Y DRV Board replacement
 - Panel itself is defective, Y FPC attached to panel itself is open or short



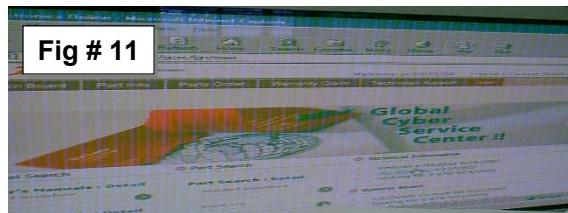
There can be several horizontal lines

8. Regular vertical lines in the whole screen. (mainly in one specific color, regular line is flicking)

- 1) This problem is related to CONTROL PCB.
- 2) Replace CONTROL PCB



Regular vertical lines in the whole screen



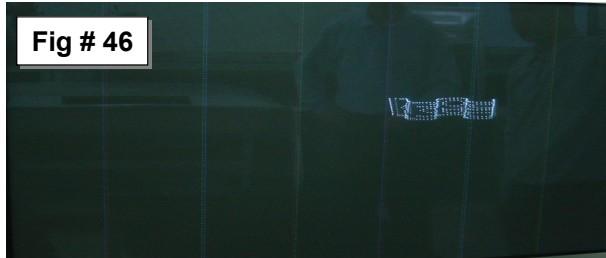
9. Vertical Data copy

- 1) This happens when scan wave is not reproduced properly.
- 2) Replace Y-Board

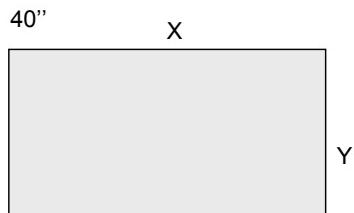
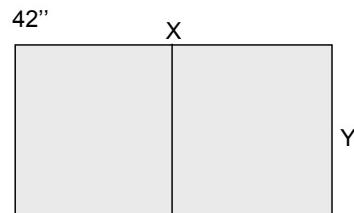
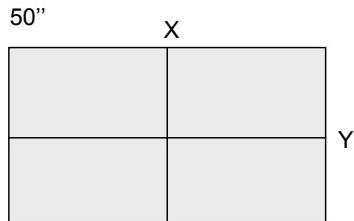
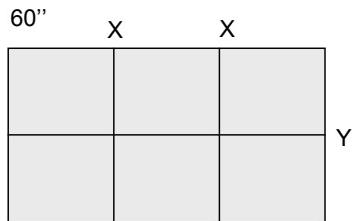


<case 1 : partial Top copy > <case2 : partial Bottom copy >

Fig # 46



10. Grid X and Y Layout by screen size.



10. Input signal pattern is displayed but the screen is dark.

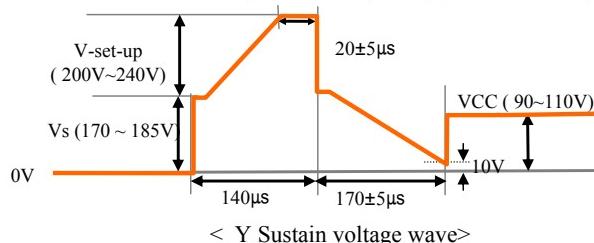
- 1) It happens when Z Board is not operating well.
- 2) Check whether Z Board's power connector is plugged properly.
- 3) Check whether the signal connector between Controller PCB & Z Board is plugged.
- 4) Replace Z Board or controller PCB.

11. Input signal is white pattern but other colors are displayed in spots, missing data.

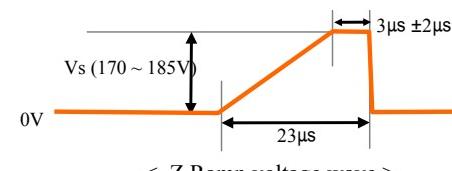
- 1) Check the slope & waveform of Y Board set up, set down.
- 2) Check the slope of Z Board's ramp waveform
- 3) Measure each Board's output waveform by over 200MHz scope and reference Fig. 12 and 13.
it is possible to control Y Board's setup slope by adjusting VR2 and Z Board's ramp slope by adjusting VR1.

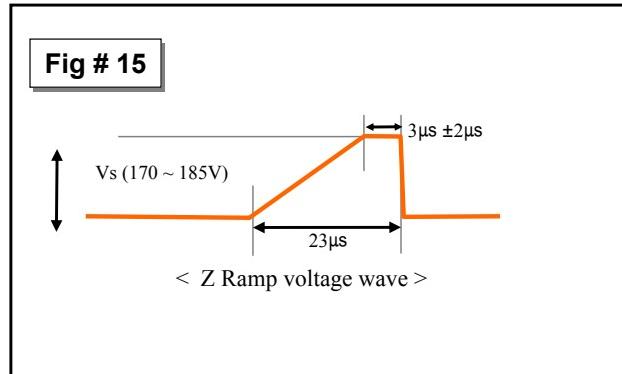
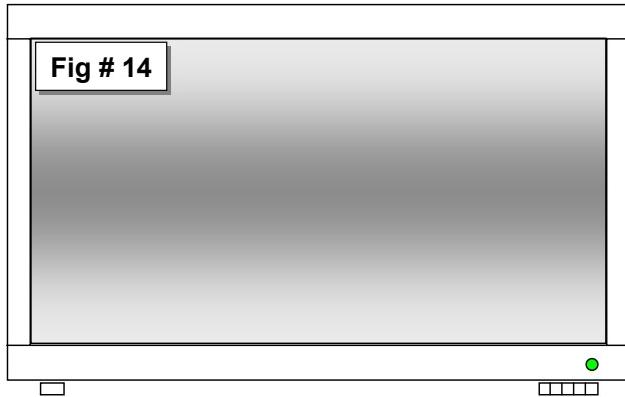
Fig # 12

- Y B/D measurement point : B61 (SUS_UP OUTPUT)

**Fig # 13**

- Z B/D measurement point : B61 (SUS_OUT)



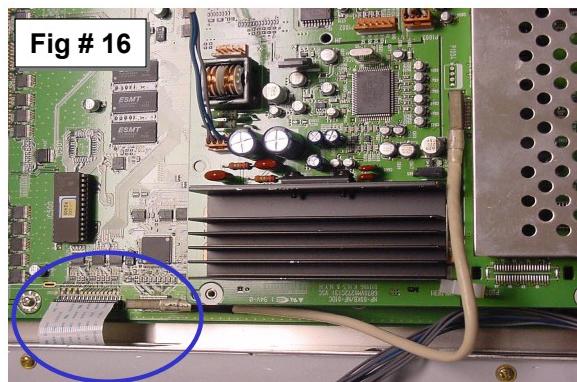


13. A specific brightness of one color is not clear.

- 1) Check CTRL Board's input signal connector.
- 2) Replace CTRL Board.

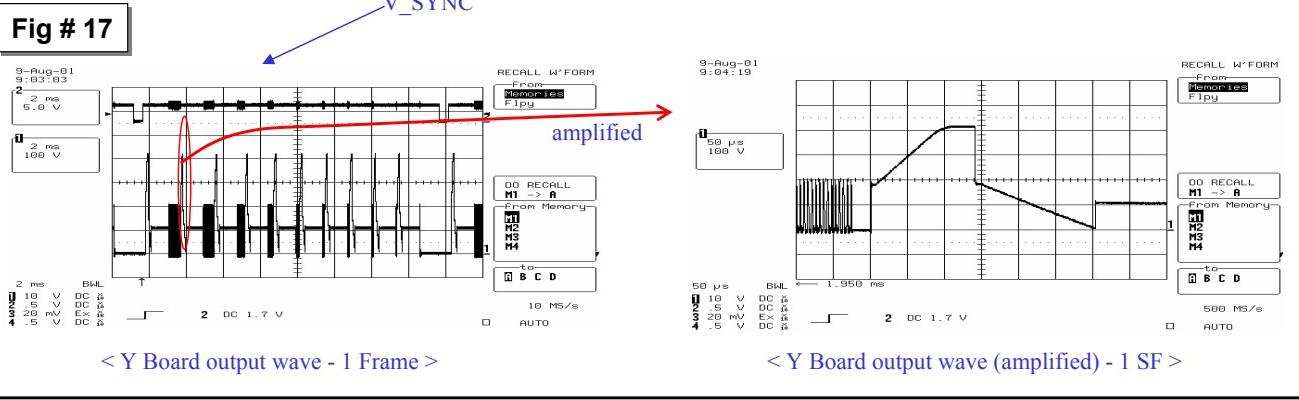
14. With a full white pattern, the picture is darker toward the center.

- 1) Dark picture will occur when the Z-board is missing its ramp waveform/ see Fig # 15
- 2) Check the connection between CTRL PCB and the Z-board signal cable.
- 3) If the signal cable is -OK- Replace the Z-Board.



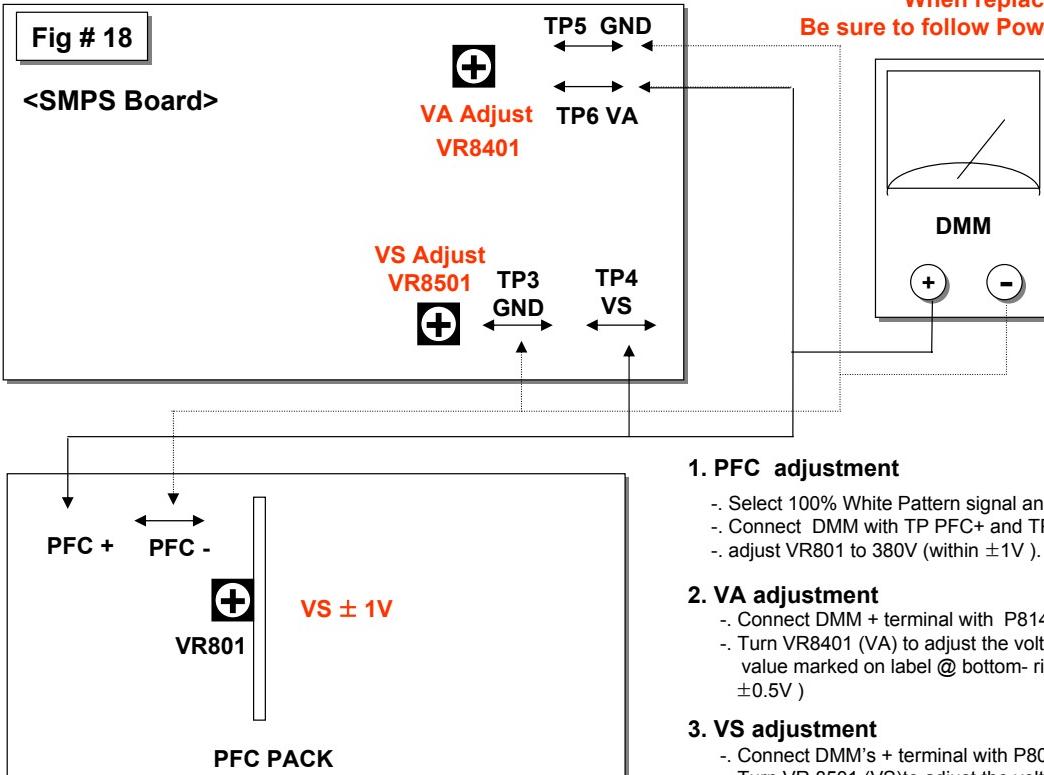
- 1) Check CTRL PCB's LED (D1~ D4).
- 2) Check the power or signal cable inputting into CTRL PCB.
- 3) Check X Board, Y Board and Z Board's power connector.
- 4) Check the connector between CTRL PCB, X Board, Y Board, and Z Board respectively.
- 5) Measure Y Board's output waveform with over 200MHz oscilloscope and compare it to Fig 17 below.
 - Y Board measurement point : (SUS_UP OUTPUT)
 - X Board measurement point : (SUS_DN OUTPUT)
- 6) Test data X Board waveform @ COF IC See Fig 34 page 26.
- 7) No Signal - Replace Controller PCB

Fig # 17

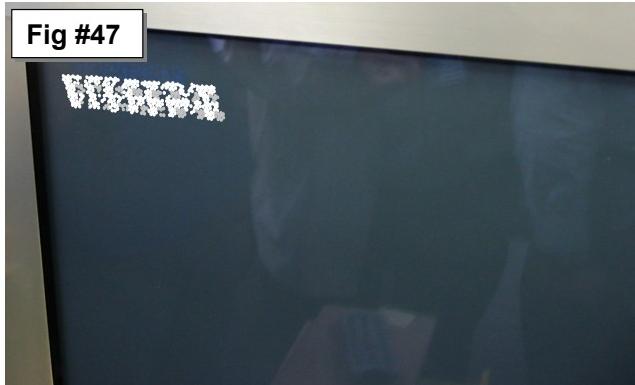


Voltage Adjustment

Service Adjustment



Voltage Adjustment



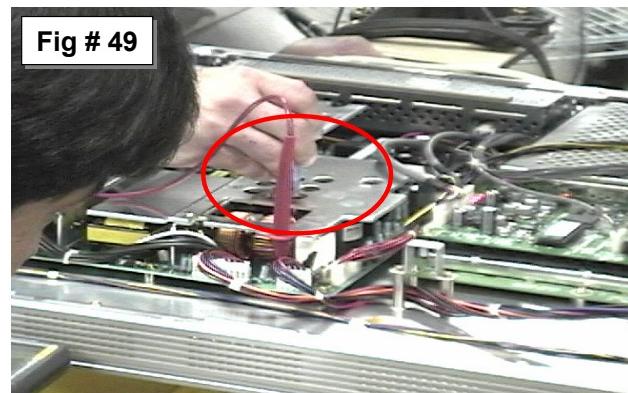
Service Adjustment



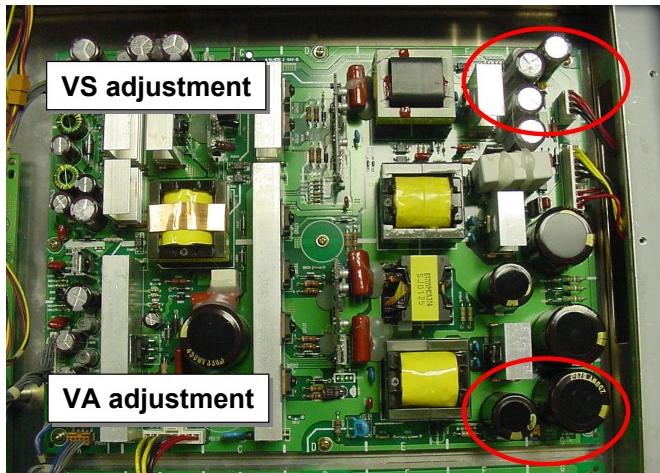
Problem: The picture above is an example of distorted text.

Cure: **VA & VS** voltage adjustment is needed when the following items are found:

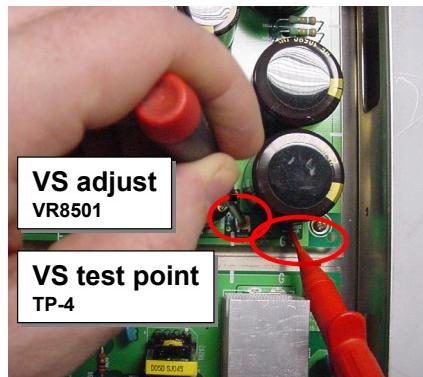
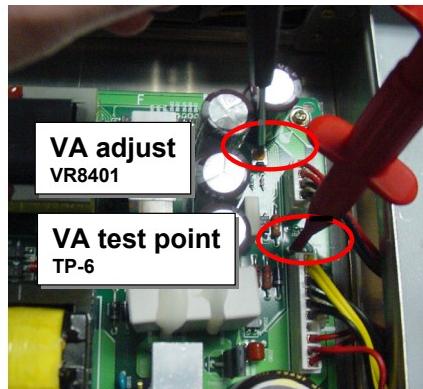
- Distorted text
- Blocked text
- Pixelated picture
- Dots running from side to side
- Tearing in the picture
- Video smear



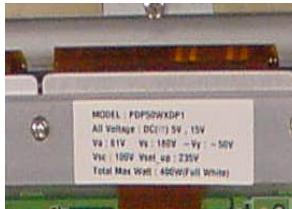
60" Test points and voltage adjustments.

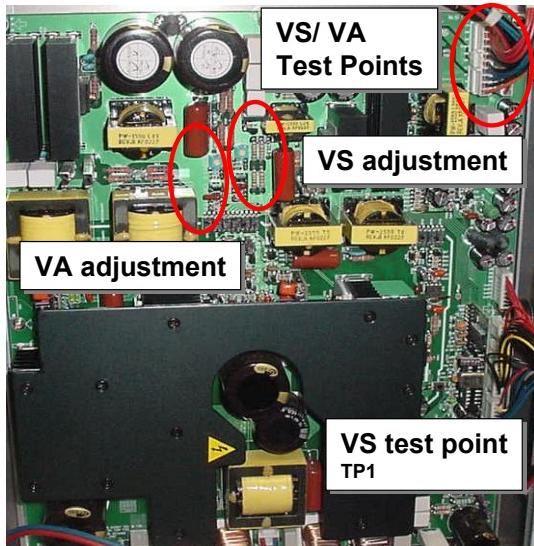


Service Adjustment

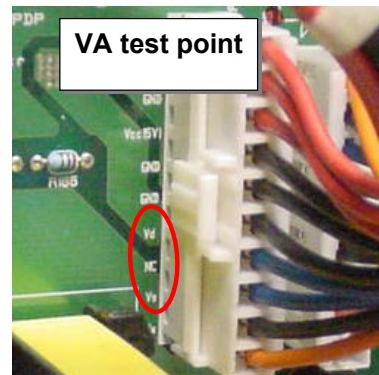
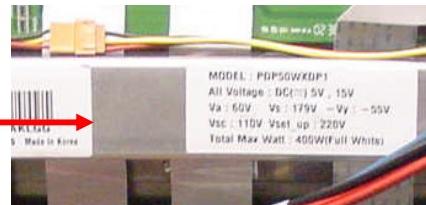


The voltage settings change from model to model and are labeled and located at the top center of the screen.



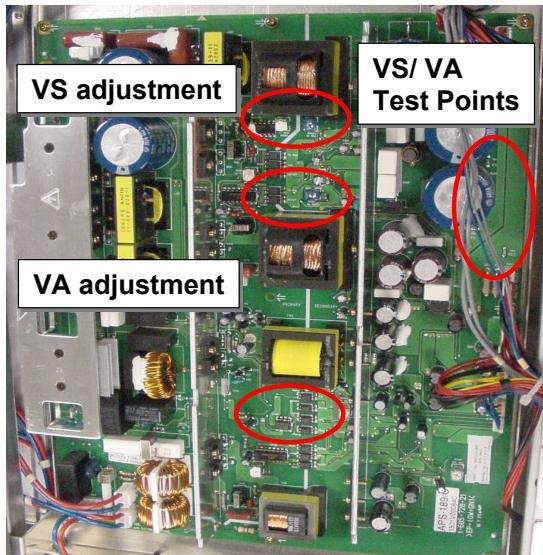


The voltage settings change from model to model and are labeled and located at the top center of the screen.

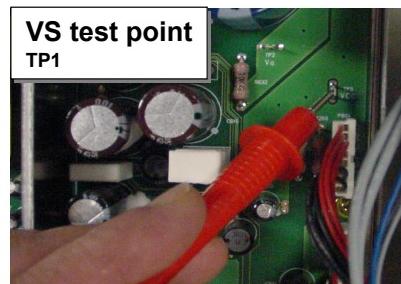


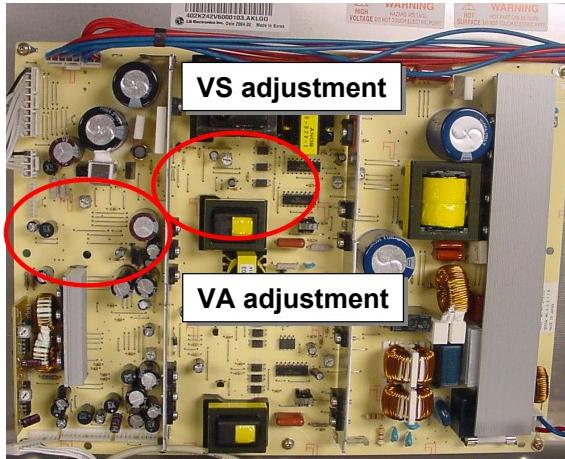
50"- 28 Series Test points and voltage adjustments.

Service Adjustment

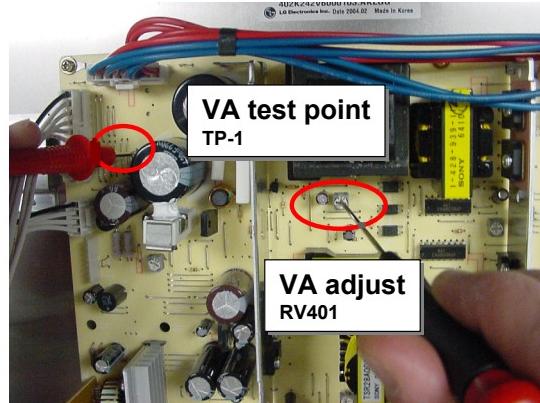
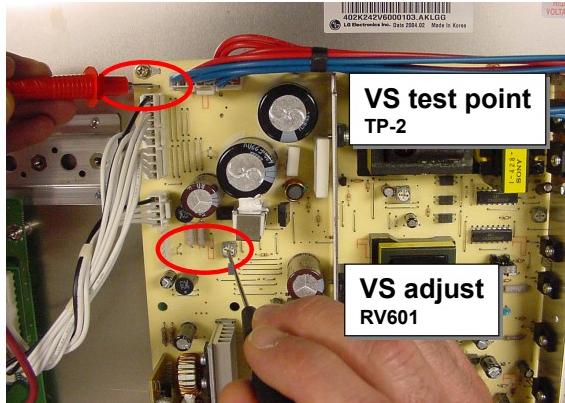
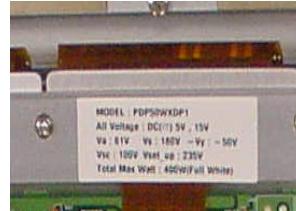


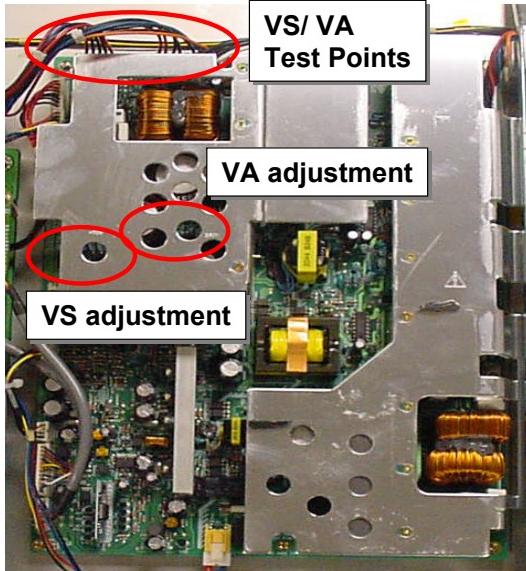
The voltage settings change from model to model and are labeled and located at the top center of the screen.



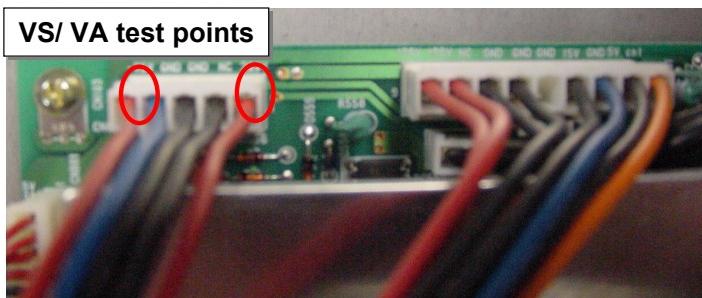
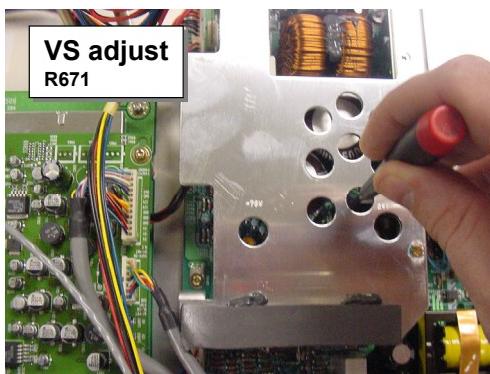
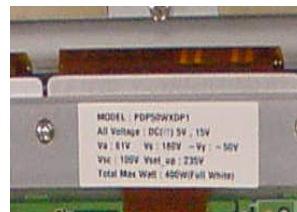


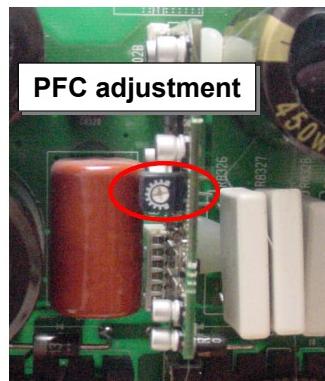
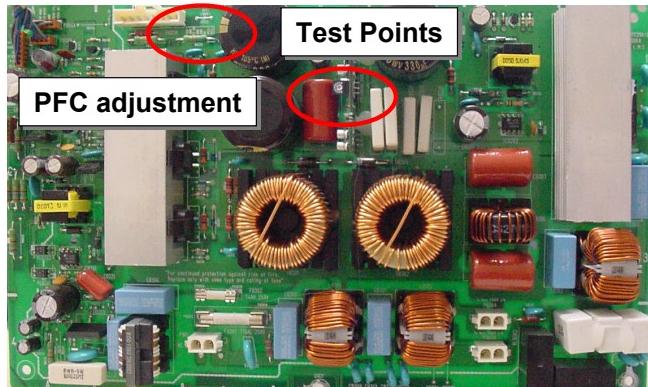
The voltage settings change from model to model and are labeled and located at the top center of the screen.





The voltage settings change from model to model and are labeled and located at the top center of the screen.





Pulse Frequency - Coefficient (PFC) adjustment is Located the primary supply and is for aligning grid voltage. The panels grid voltage averages 360 to 380 volts depending on panel circuit.

Known symptoms:

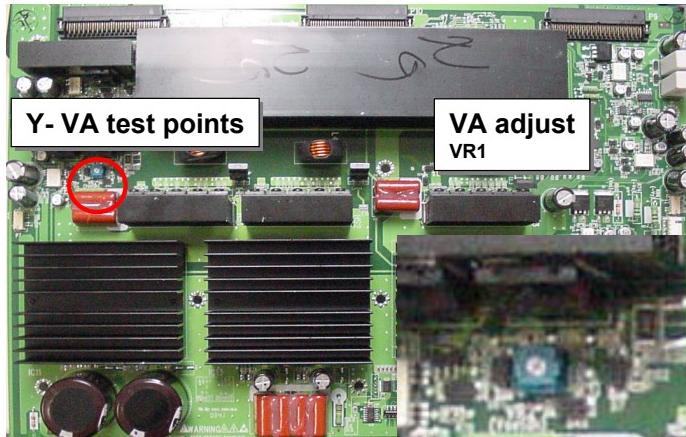
1. Intermittent Power
2. Picture dimming to bright during certain scenes
3. Primary colors off, Hue or flesh tones
4. Colors bleeding
5. Left to Right picture is dark to bright

Y-amp, Test points and voltage adjustments.

Service Adjustment

6871QYH023A

/ Example 60"



6871QYH027A

/ Example 42"

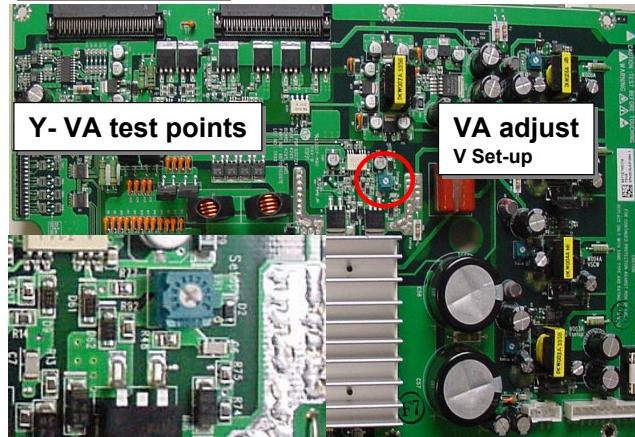
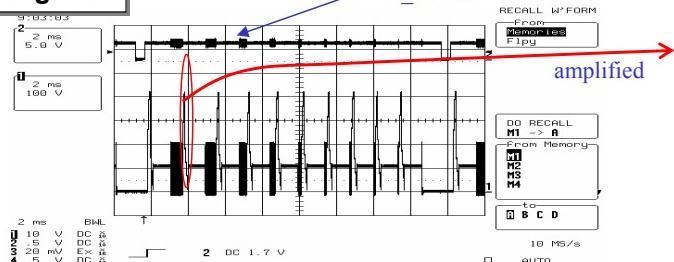
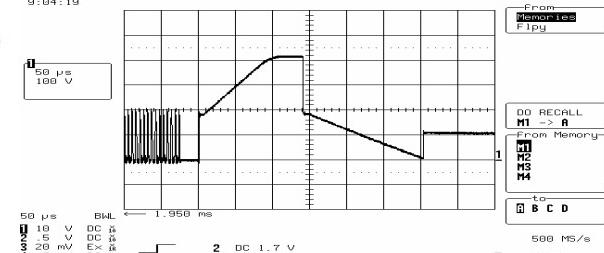


Fig # 61

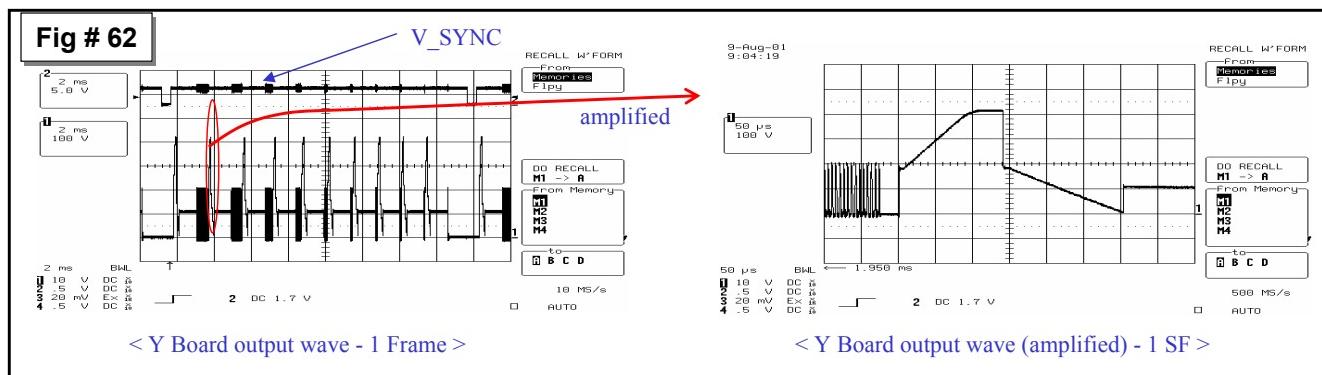
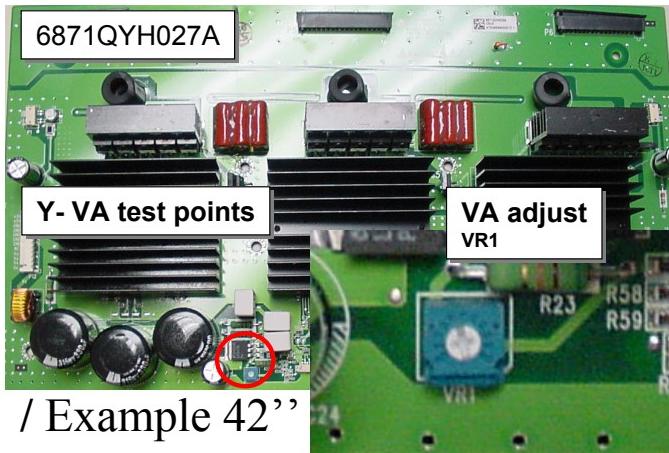
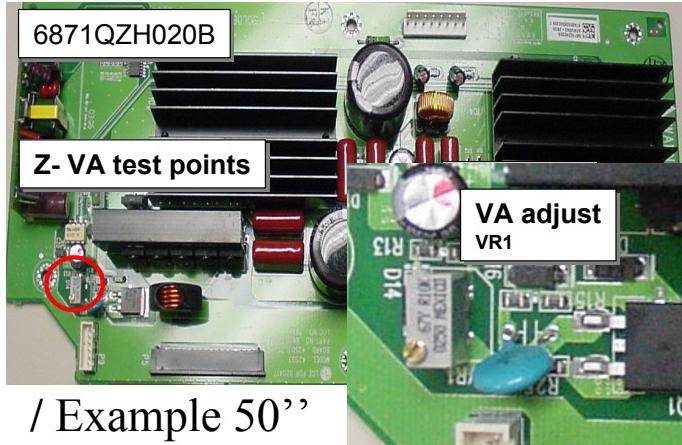


< Y Board output wave - 1 Frame >

9-Aug-91
9:04:19

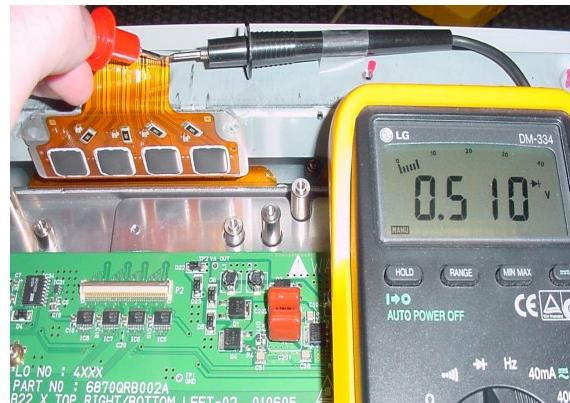


< Y Board output wave (amplified) - 1 SF >

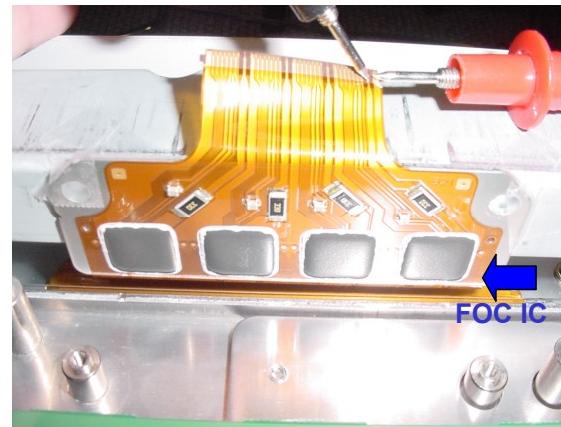
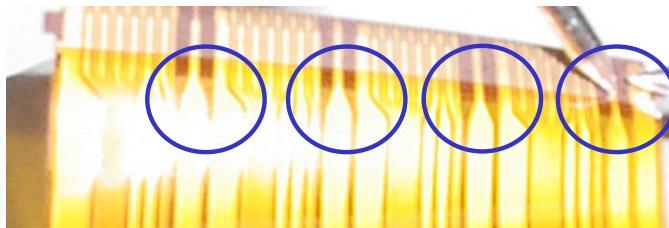


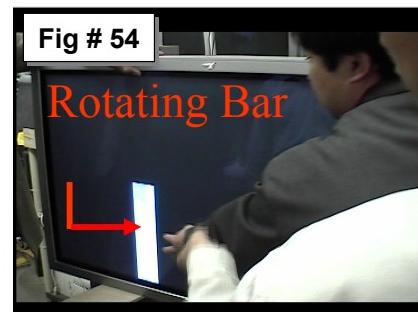
Testing COF IC for Defective Panel/ Example 50"

Panel Testing

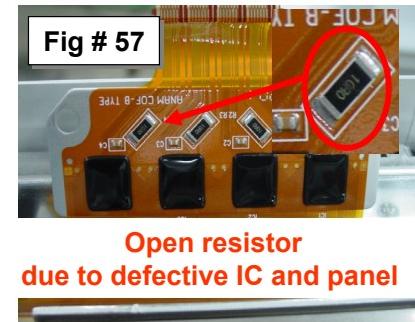
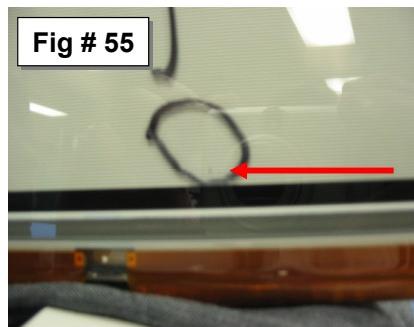


If an X-Board is found defective there is a slim possibility that the panel could cause the new X-Board Installed to fail due to panel short test by performing Diode Check as in the above figures.





If an X-Board is found defective there is a slim possibility that a pixel could be found defective in the responsible quadrant. This is caused by an arch in the panel caused at the point of the IC's failure.



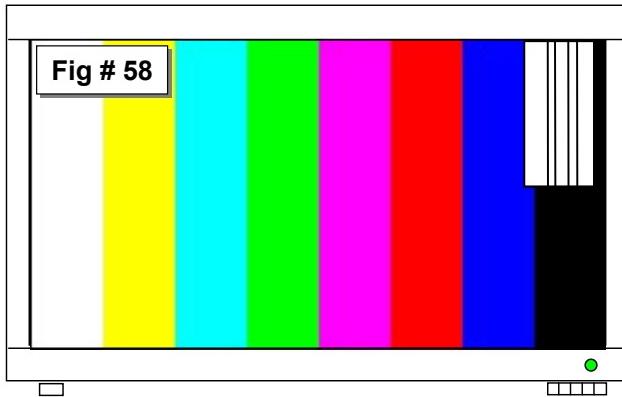
The above FIGURE 55 shows the defective cell damage. Figure 56 shows the panel ribbon attached to panel. We identified that for this panel the ribbons integrated IC was shorted.

Note: In figure 55 is 1 defective cell this is caused by an arch in the panel, this caused COF IC too short.

Testing Y driver board for problems/ Example 50”.

Panel Testing

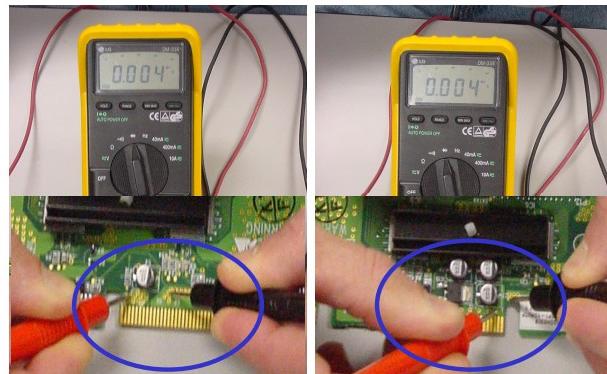
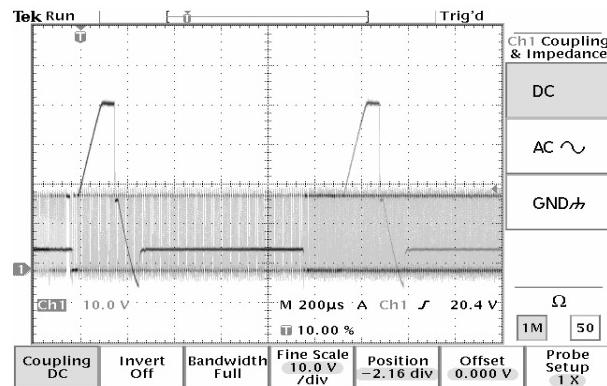
- 1) Problem occurs when IC shorts and loss of signal to panel.
- 2) Check the con. between CTRL & Z Board's signal cable.



- 3) The following image is the test point for waveform.
- 4) To the right is two test points for shorted IC's 50”.

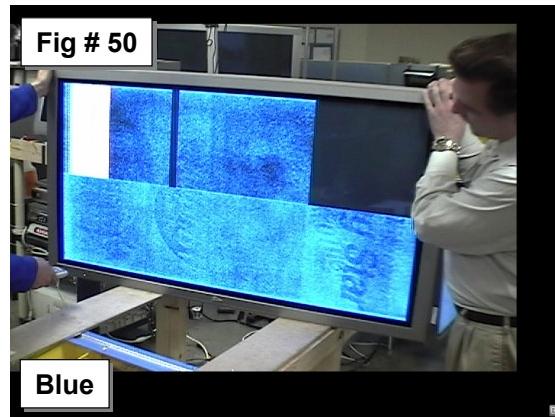
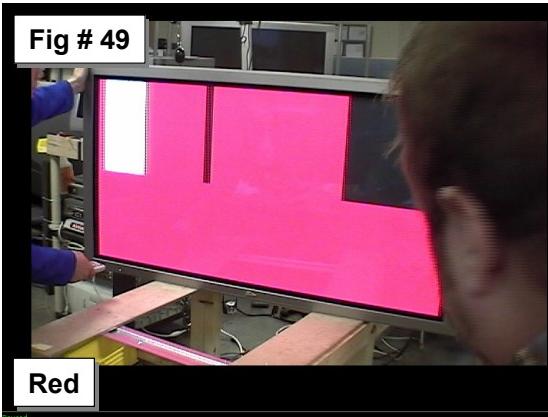


- 5) Sustain-up Waveform example



Defective Panel with excessive etching

Panel Testing



Most etching can be identified by using a Green/ Blue or Red background and by adjusting the intensity down. If the one color is displayed that CAUSED the etching the color will be low in intensity compared to the rest of the screen.

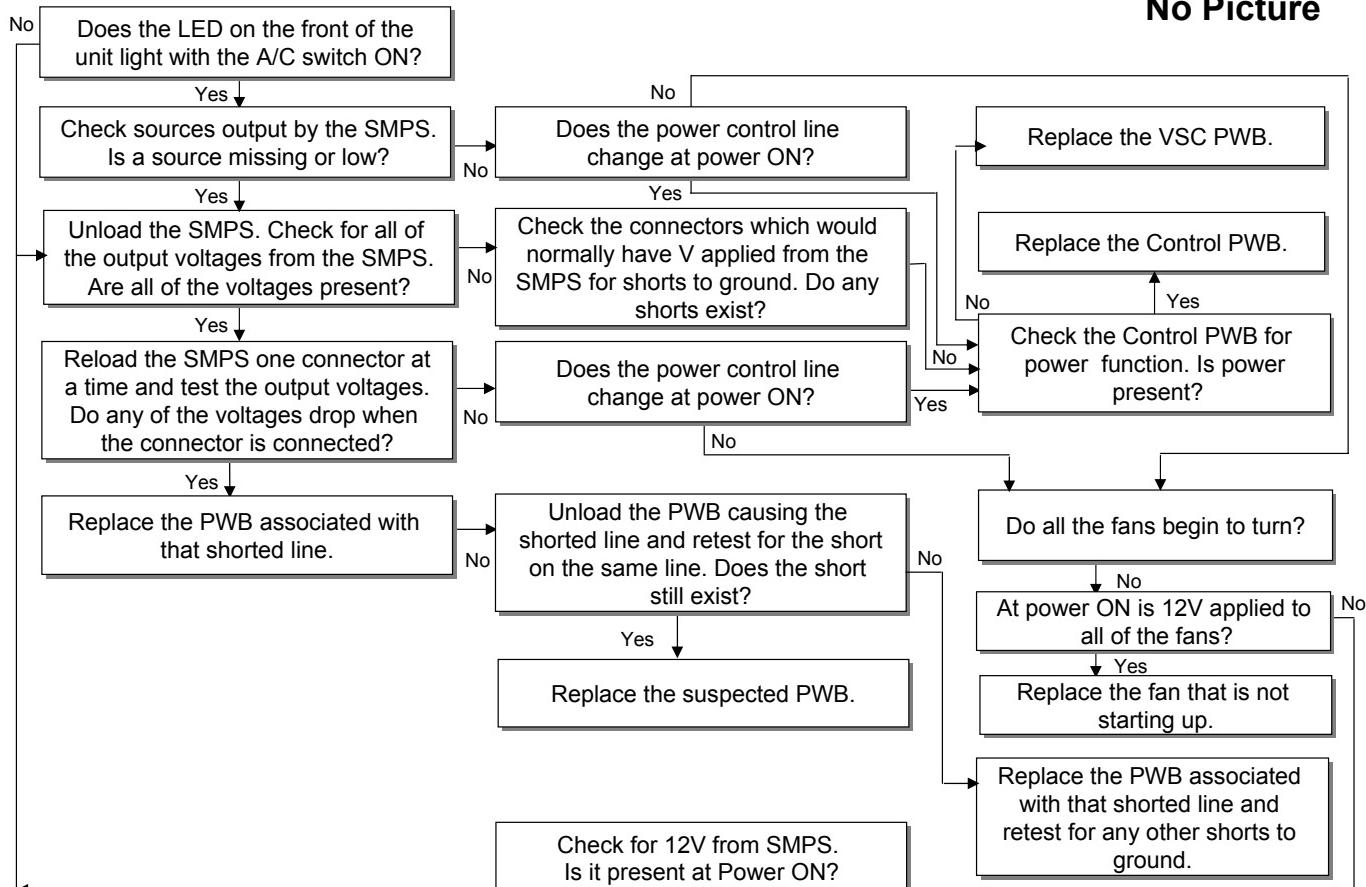
Etching considerations for extreme cases you need to run white balance or heat run in 6 hour increments up to 24 hours. If you can't perform a proper white balance after 24 hours the panel is not within spec and the panel will not work/ display properly.

To enter in to White Balance (Heat Run), Press Power On (1). Then, press adjust right (2) to activate Blue, Green and Red. With the Heat run activated on White Balance run for 6 hours and check color background by pressing adjust right (2) for testing picture quality. Complete and repeat if needed not to exceed 24 hours.



Troubleshooting

Power Section No Picture





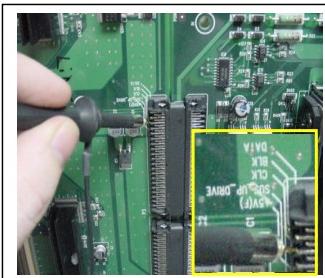
Control Board & Y-Driver Amp

Check & Adjust: PFC / VS / VA voltages to panel specifications

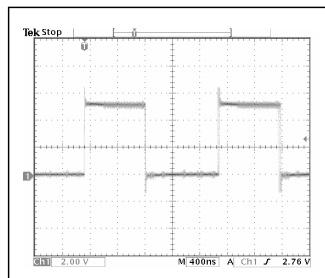
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board



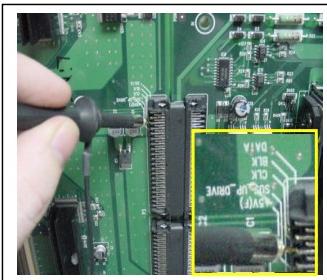
Y- Amp

Check & Adjust: PFC / VS / VA voltages to panel specifications

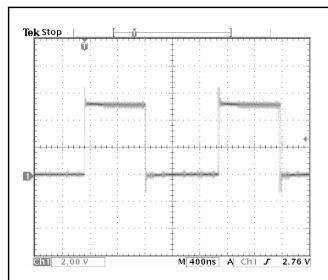
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board



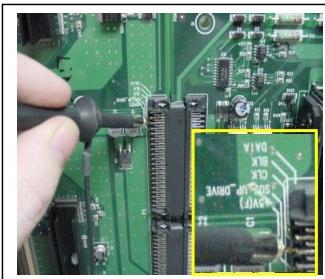
Y-Driver Amp

Check & Adjust: PFC / VS / VA voltages to panel specifications

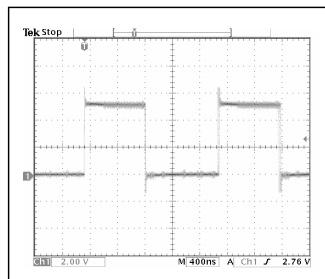
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board

60" Known Visual problems with boards that fixed

Visual Problems



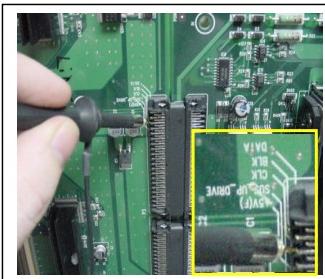
Y-Driver Top

Check & Adjust: PFC / VS / VA voltages to panel specifications

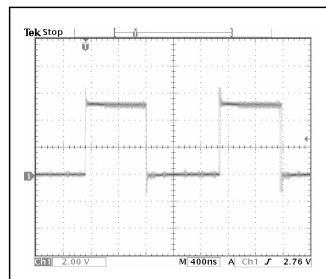
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



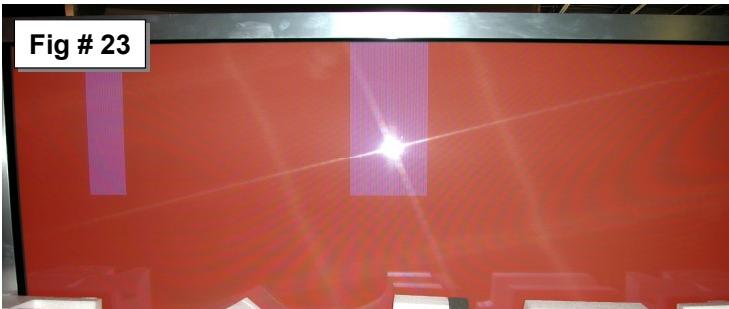
Y Sustain WF test point



Y Sustain WF



Digital Control board

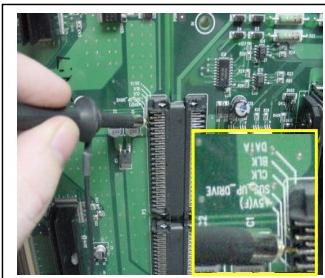


Check & Adjust: PFC / VS / VA voltages to panel specifications

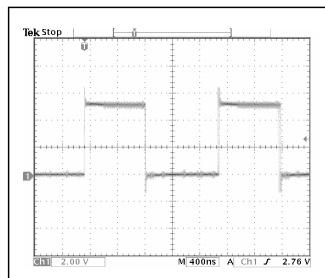
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



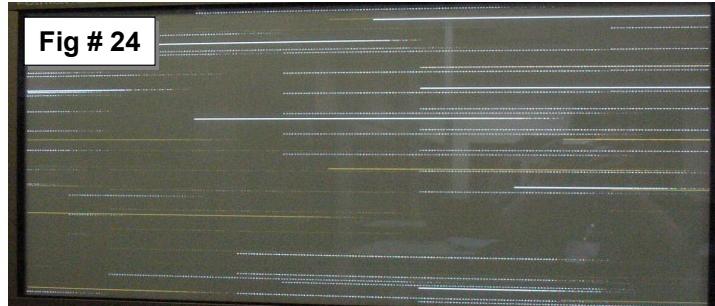
Y Sustain WF test point



Y Sustain WF



Digital Control board



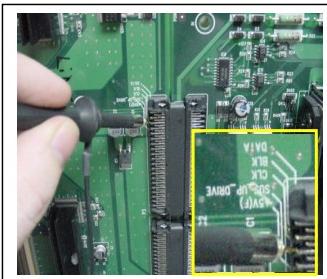
Y-Driver Bottom

Check & Adjust: PFC / VS / VA voltages to panel specifications

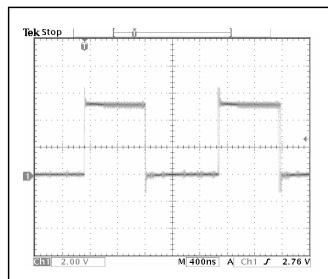
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



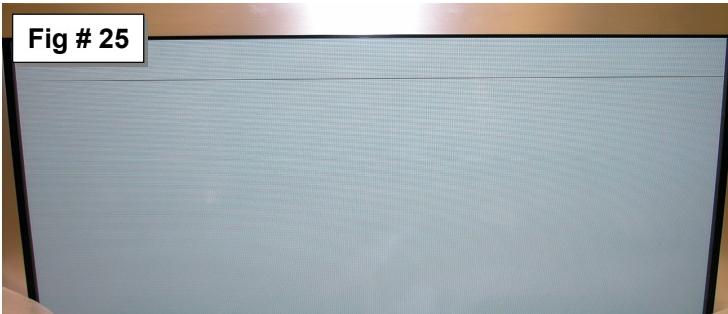
Y Sustain WF test point



Y Sustain WF



Digital Control board



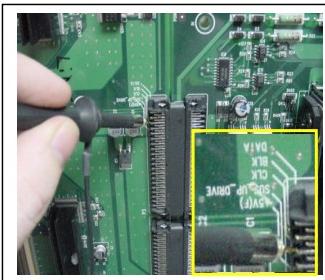
Y-Driver - Top

Check & Adjust: PFC / VS / VA voltages to panel specifications

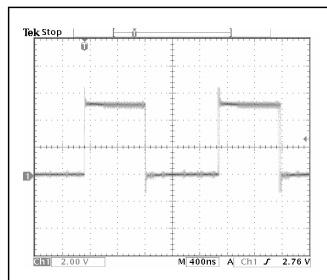
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point

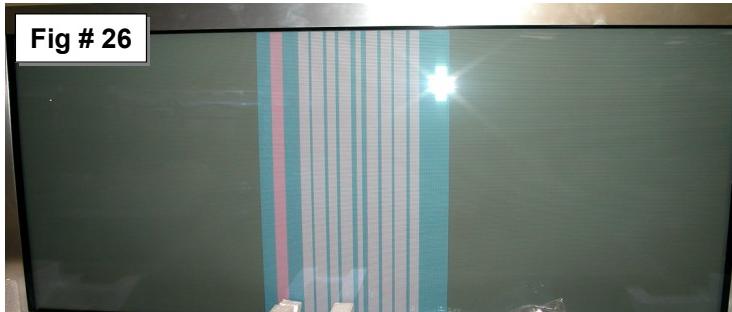


Y Sustain WF



Digital Control board

Fig # 26



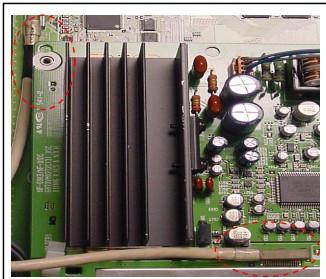
VSC- Board

Check & Adjust: PFC / VS / VA voltages to panel specifications

Check Connection VSC and Digital board

Okay? Replace VSC board

Not Resolved? Replace Digital board



VSC to Digital cable



VSC Board



Digital Control

Fig # 27

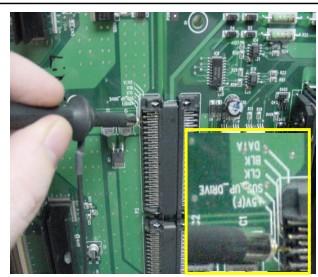
Y-Driver - Top

Check & Adjust: PFC / VS / VA voltages to panel specifications

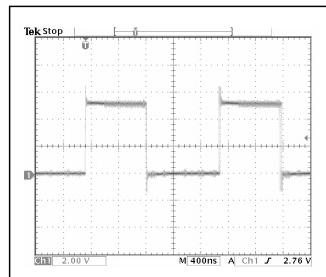
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board



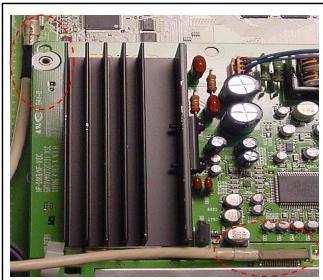
VSC- Board

Check & Adjust: PFC / VS / VA voltages to panel specifications

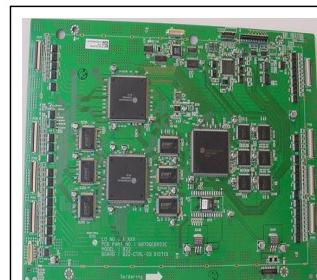
Check Connection VSC and Digital board

Okay? Replace VSC board

Not Resolved? Replace Digital board



VSC to Digital cable



42" Known Visual problems with boards that fixed

Visual Problems

Fig # 29



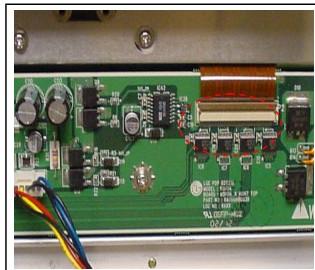
X- Board (Top Right)

Check & Adjust: PFC / VS / VA voltages to panel specifications

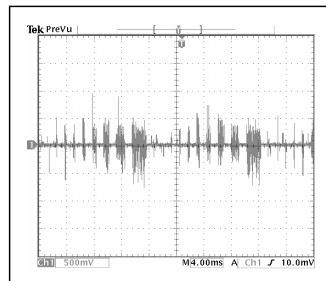
Check X-board wave form

Okay? Replace X-Board

Not Resolved? Check for C.O.F IC Short



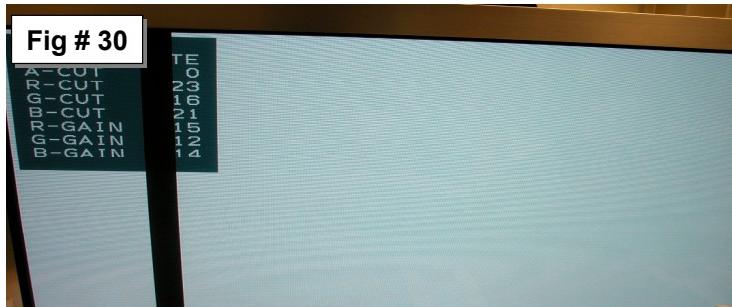
X-Board WF test point



ER down X- board



C.O.F IC test 4 Defective Panel

Fig # 30

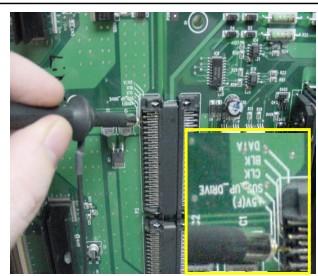
X-Drive Board

Check & Adjust: PFC / VS / VA voltages to panel specifications

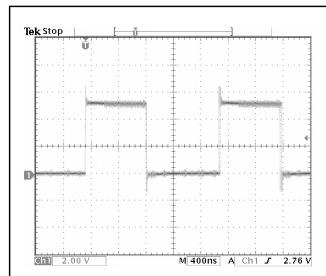
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board

50" Known Visual problems with boards that fixed

Visual Problems



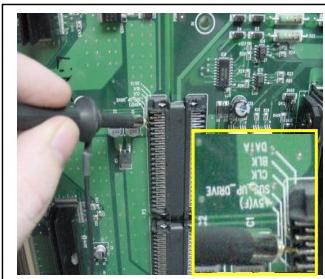
Y-Driver Amp upper

Check & Adjust: PFC / VS / VA voltages to panel specifications

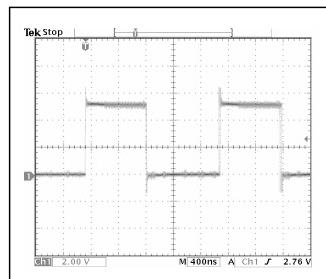
Not okay, Check Y-Sustain Sub-amp wave form

Okay, Replace Y-Sustain Amp

Not okay. Replace Digital Control board



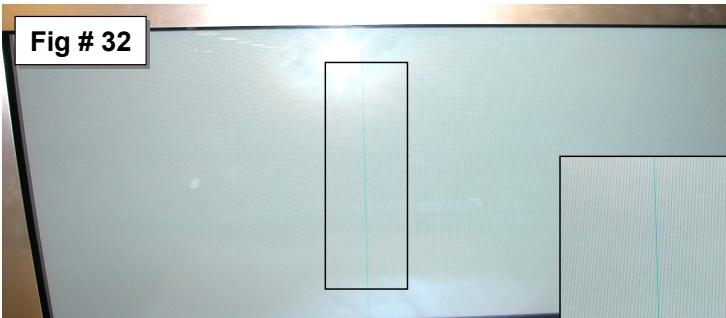
Y Sustain WF test point



Y Sustain WF



Digital Control board



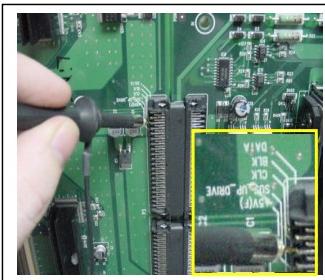
Digital Control board

Check & Adjust: PFC / VS / VA voltages to panel specifications

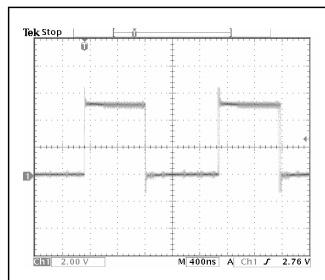
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



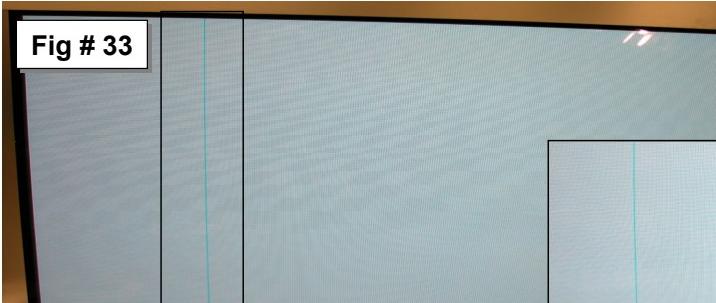
Y Sustain WF test point



Y Sustain WF



Digital Control board



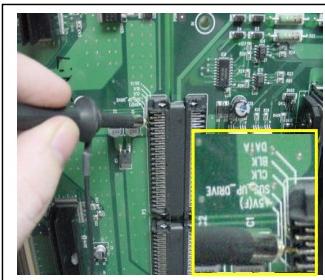
Digital Control Board

Check & Adjust: PFC / VS / VA voltages to panel specifications

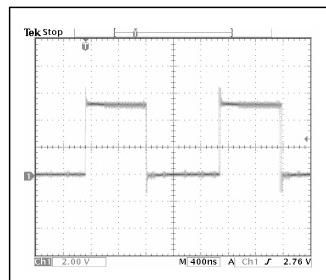
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board

50" Known Visual problems with boards that fixed

Visual Problems



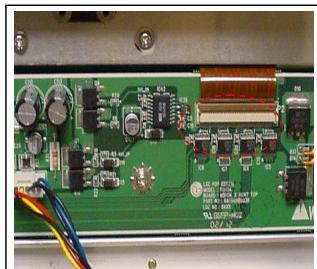
VSC Board

Check & Adjust: PFC / VS / VA voltages to panel specifications

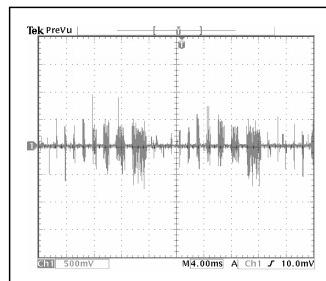
Check X-board wave form

Okay? Replace X-Board

Not Resolved? Check for C.O.F IC Short



X-Board WF test point



ER down X- board



C.O.F IC test 4 Defective Panel

50" Known Visual problems with boards that fixed

Visual Problems

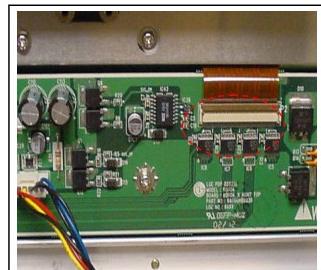


Check & Adjust: PFC / VS / VA voltages to panel specifications

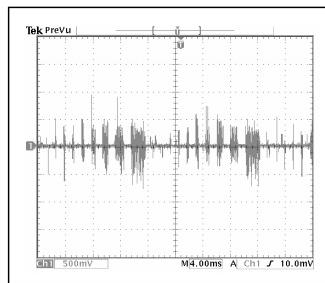
Check X-board wave form

Okay? Replace X-Board

Not Resolved? Check for C.O.F IC Short



X-Board WF test point



ER down X- board



C.O.F IC test 4 Defective Panel

Fig # 35



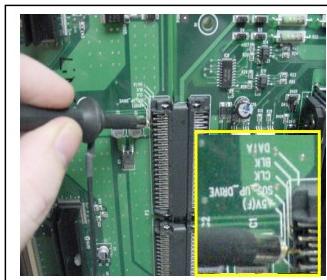
Y- Driver Amp bottom

Check & Adjust: PFC / VS / VA voltages to panel specifications

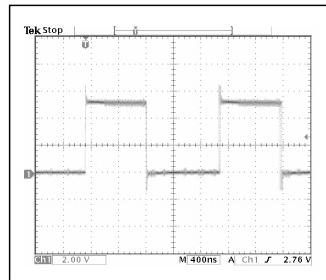
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board

50" Known Visual problems with boards that fixed

Visual Problems



X- Board (Bottom Left)

Check & Adjust: PFC / VS / VA voltages to panel specifications

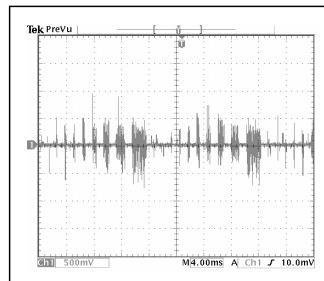
Check X-board wave form

Okay? Replace X-Board

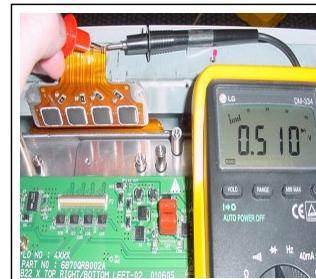
Not Resolved? Check for C.O.F IC Short



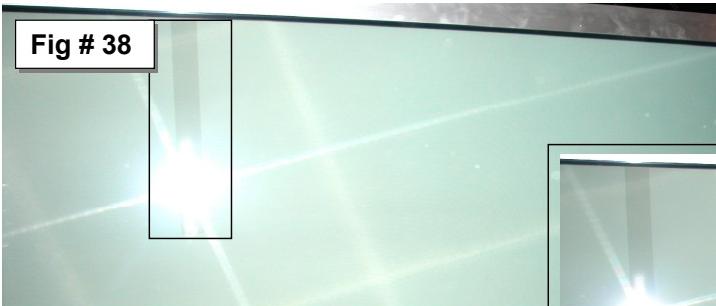
X-Board WF test point



ER down X- board



C.O.F IC test 4 Defective Panel



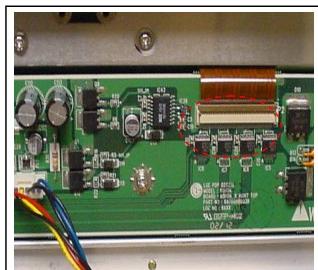
X- Board (Upper Right)

Check & Adjust: PFC / VS / VA voltages to panel specifications

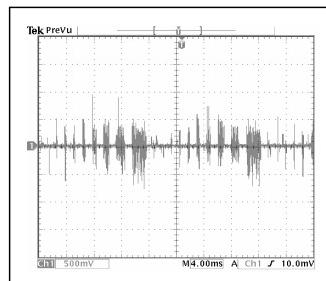
Check X-board wave form

Okay? Replace X-Board

Not Resolved? Check for C.O.F IC Short



X-Board WF test point



ER down X- board



C.O.F IC test 4 Defective Panel



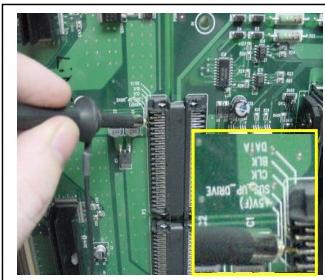
Digital Control Board

Check & Adjust: PFC / VS / VA voltages to panel specifications

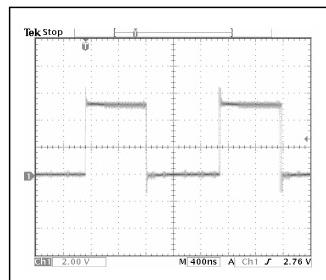
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board

Fig # 40



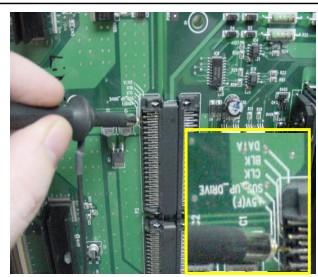
Y- Driver Bottom

Check & Adjust: PFC / VS / VA voltages to panel specifications

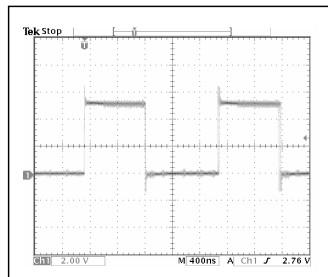
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board



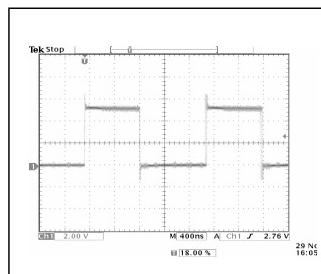
X-Drive Top

Check & Adjust: PFC / VS / VA voltages to panel specifications 61

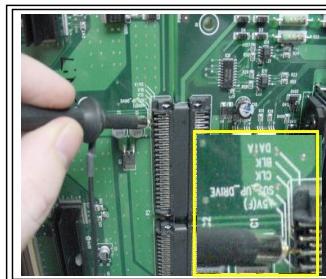
Check X-Board waveform

Okay? Check for C.O.F IC Short

Shorted? Defective Panel



Y Sustain WF



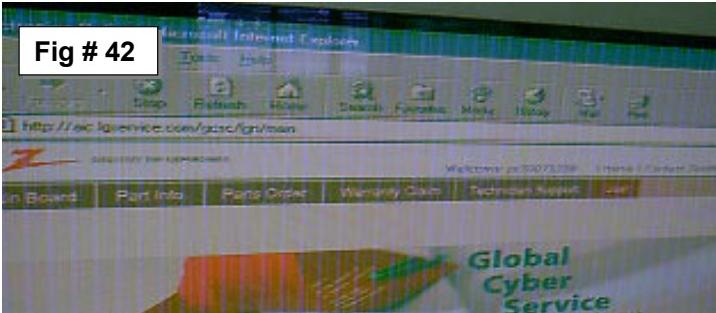
Y Sustain WF test point



Y Sustain Sub-Amp board

50" Known Visual problems with boards that fixed

Visual Problems



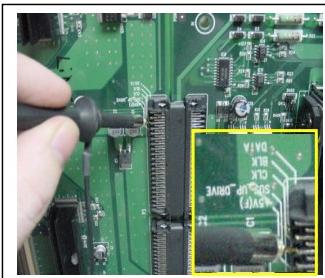
Digital Control Board

Check & Adjust: PFC / VS / VA voltages to panel specifications

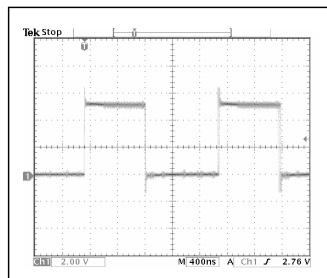
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



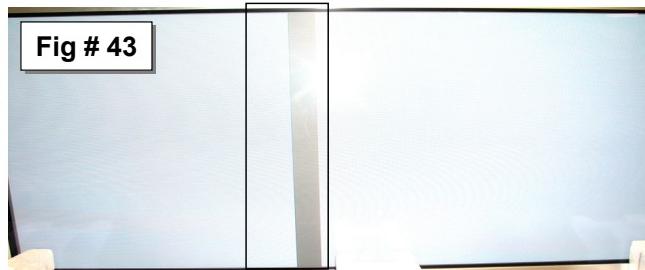
Y Sustain WF



Digital Control board

Known Visual problems & found panel defective

Visual Problems



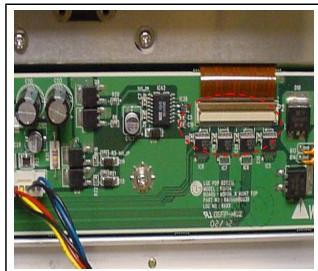
C.O.F IC – Ribbon shorted/ Part of Panel
Defective Panel

Check & Adjust: PFC / VS / VA voltages to panel specifications

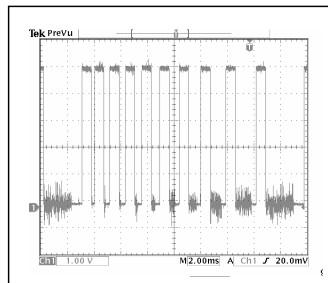
Check X-Board waveform

Okay? Check for C.O.F IC Short

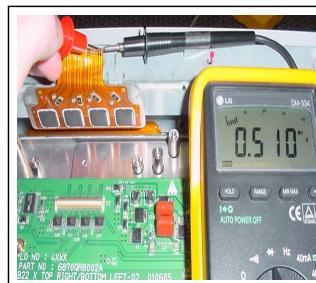
Shorted? Defective Panel



X-Board WF test point



X-Board Sustain WF



C.O.F IC test 4 Defective Panel



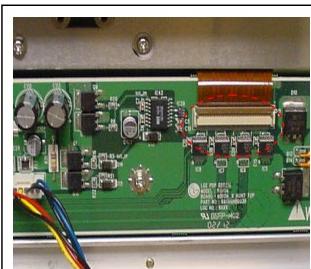
Data @ X-Board – Yes/ tested for shorted C.O.F IC – Ribbon shorted/ Defective Panel

Check & Adjust: PFC / VS / VA voltages to panel specifications

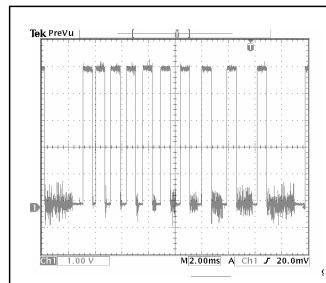
Check X-Board waveform

Okay? Check for C.O.F IC Short

Shorted? Defective Panel



X-Board WF test point



X-Board Sustain WF



C.O.F IC test 4 Defective Panel



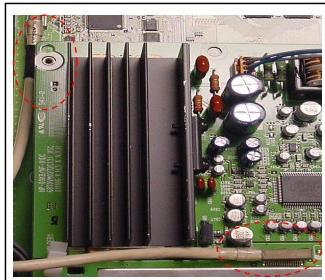
Display's waves – V.S.C Board defective

Check & Adjust: PFC / VS / VA voltages to panel specifications

Check Connection VSC and Digital board

Okay? Replace VSC board

Not Resolved? Replace Digital board



VSC to Digital cable



VSC Board



Digital Control

Fig # 47



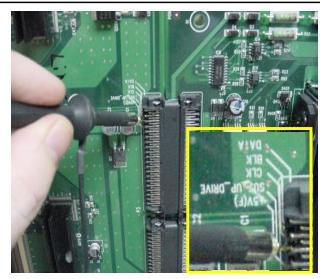
Display's Vertical Bars – Defective Y-Sub-amp

Check & Adjust: PFC / VS / VA voltages to panel specifications

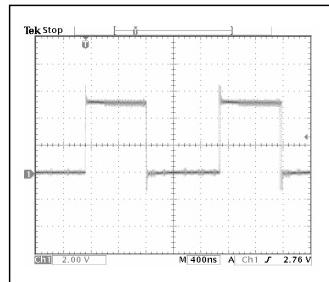
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

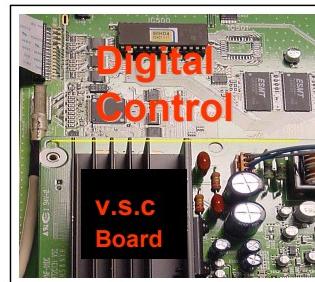
Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board



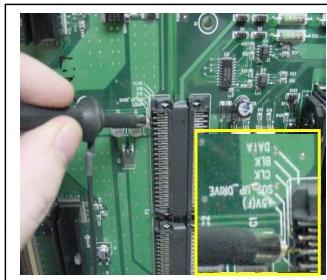
Display's Vertical Bars – Defective Y-Sub-amp

Check & Adjust: PFC / VS / VA voltages to panel specifications

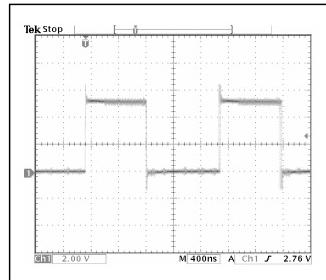
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

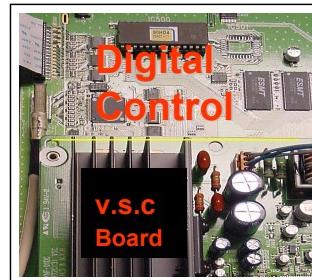
Not Resolved? Replace Digital Control board



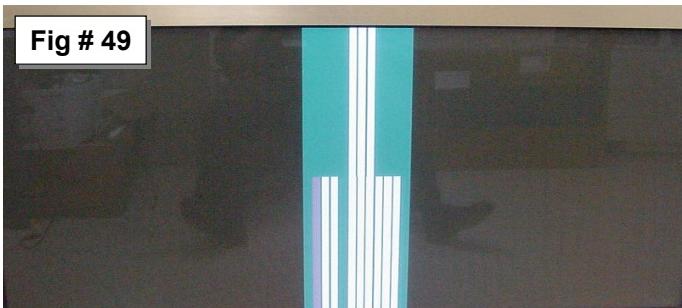
Y Sustain WF test point



Y Sustain WF



Digital Control board



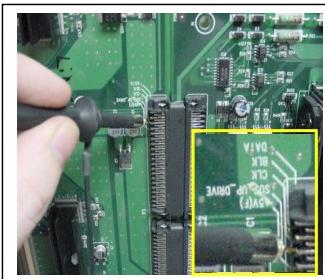
Y-Driver - Top

Check & Adjust: PFC / VS / VA voltages to panel specifications

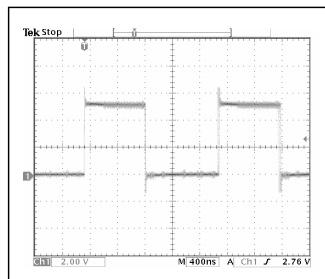
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board

Known Visual problems & found panel defective

Visual Problems

Fig # 44



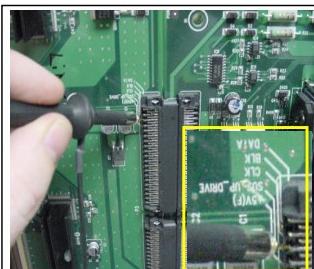
C.O.F IC – Ribbon shorted/ Part of Panel
Defective Panel

Check & Adjust: PFC / VS / VA voltages to panel specifications

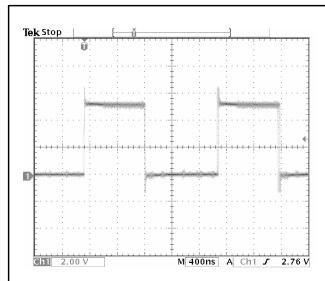
Check Y-Sustain Sub-amp wave form

Okay? Check for C.O.F IC Short

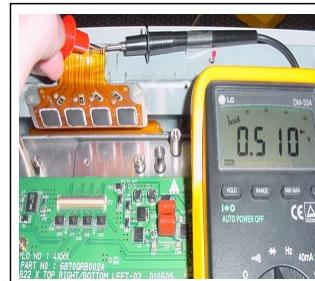
Shorted? Defective Panel



Y-Sustain Sub-amp test point



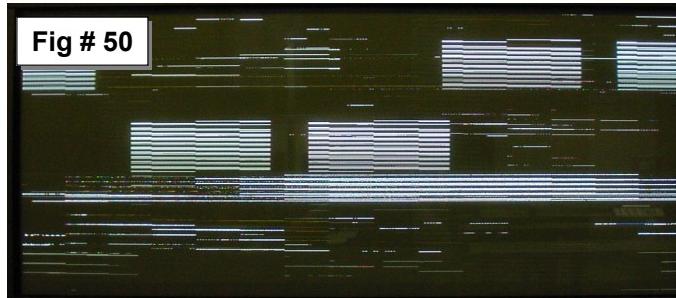
Y Sustain WF



C.O.F IC test 4 Defective Panel

Known Visual problems & found panel defective

Visual Problems



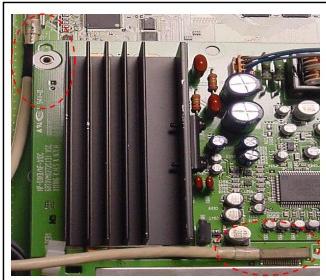
VSC- Board

Check & Adjust: PFC / VS / VA voltages to panel specifications

Check Connection VSC and Digital board

Okay? Replace VSC board

Not Resolved? Replace Digital board



VSC to Digital cable



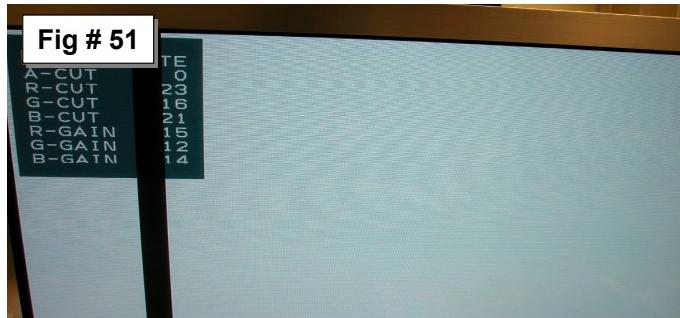
VSC Board



Digital Control

Known Visual problems & found panel defective

Visual Problems



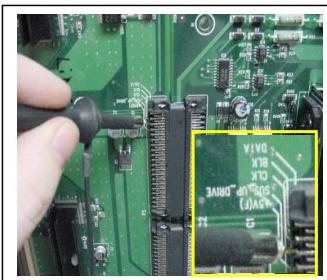
Y-Driver - Top

Check & Adjust: PFC / VS / VA voltages to panel specifications

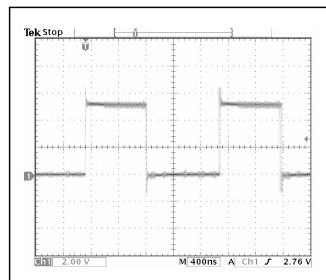
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board



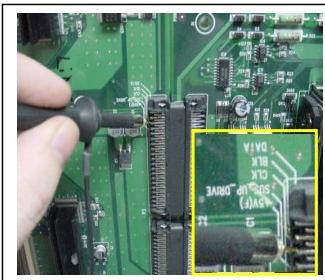
Y-Driver Amp upper

Check & Adjust: PFC / VS / VA voltages to panel specifications

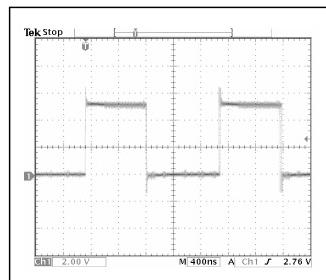
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board

Known Visual problems & found panel defective

Visual Problems



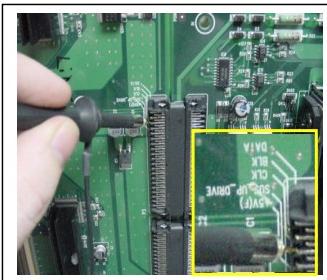
Digital Control board

Check & Adjust: PFC / VS / VA voltages to panel specifications

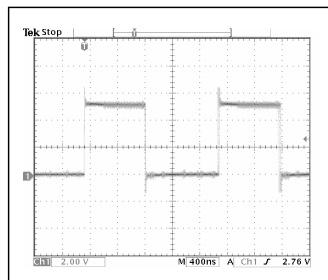
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board



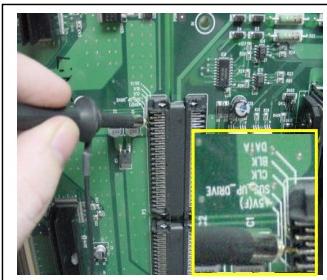
Digital Control Board

Check & Adjust: PFC / VS / VA voltages to panel specifications

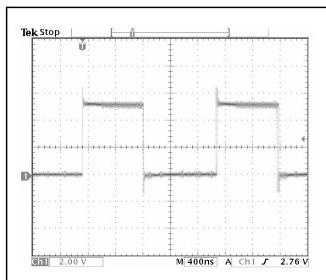
Check Y-Sustain Sub-amp wave form

Okay? Replace Y-Sustain Amp

Not Resolved? Replace Digital Control board



Y Sustain WF test point



Y Sustain WF



Digital Control board

Type of connector : D-Sub 9-pin male

* Use a null modem cable.

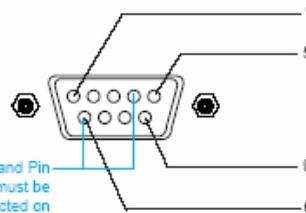
Wire the 7-Wire cable so that each pair of data lines cross between the two devices. These data line pairs are RXD (Receive data) and TXD (Transmit data), DTR (DTE side ready) and DSR (DCE side ready), and RTS (Ready to send) and CTS (Clear to send).

When using the 3-Wire cable connected to RXD, TXD and GND; Pin No. 4 (DTR) and Pin No. 6 (DSR) must be connected to the monitor. (The cable must be disconnected from the Monitor to be able to use the remote control and Monitor front panel controls.)

* With the RS-232 input connected, the Monitor cannot be controlled by both an external control device and the remote control at the same time. The Monitor can only be controlled by either the remote control or the external control device.

No. Pin Out/ key

- 1 No connection
- 2 RXD (Receive data)
- 3 TXD (Transmit data)
- 4 DTR (DTE side ready)
- 5 GND
- 6 DSR (DCE side ready)
- 7 RTS (Ready to send)
- 8 CTS (Clear to send)
- 9 No Connection



Hyper terminal

7-Wire Cable Configuration

- The Monitor is available to switch between external adjustment and remote control adjustment using a control line.

Note: If the control line is high, the monitor is controlled by the external control device. If the control line is low, the Monitor is controlled by the Monitor's remote control.

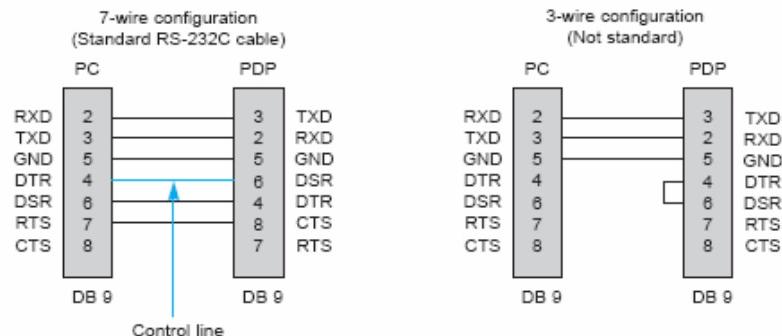
3-Wire Cable Configuration

- When using a 3-Wire cable configuration, there is no control line. The external equipment can command the Monitor to "change into remote control adjustment mode". When using a 3-Wire cable configuration, there is no control line. The external control device must put the Monitor into the "change into remote control adjustment mode". The Monitor will then be able to be controlled by the remote control. If the Monitor is turned back on, it will revert back to external device control.

- The external control device must put the Monitor into the "change into remote control adjustment mode" function in 7-Wire Configuration.

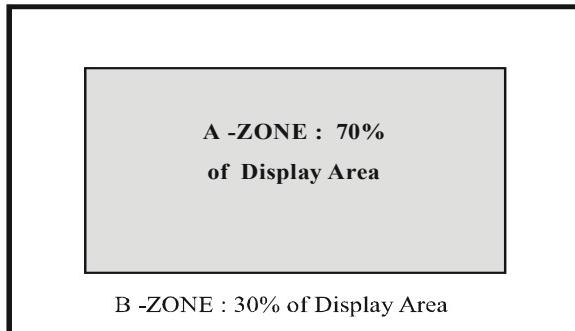
3-Wire Cable Configuration

- When using a 3-Wire cable configuration, there is no control line. The external equipment can command the Monitor to "change into remote control adjustment mode". (When using a 3-Wire cable configuration there is no control line. The external control device must put the Monitor into the "change into remote control adjustment mode" & The Monitor will then be able to be controlled by the remote control). If the Monitor is turned back on, it will revert back to external device control.
- The external control device must put the Monitor into the "change into remote control adjustment mode" function in 7-Wire Configuration.



1) Cell defect definition

- Non-ignition dot (dark defect): In a ignited cell, the cell that an extinguished size is less than 50%. Cells which are not working.
- Non-extinguishing dot(brightness defect): In an extinguished cell, the cell that a ignited size is more than 50%. Cell which is always working "ON".
- Unstable Dot (Flickering): Cell which repeats on (brightness) and off (darkness).
- Uncontrollable Dot : Cell which is brighter or stays on longer than other cells around it because of unstable working condition.

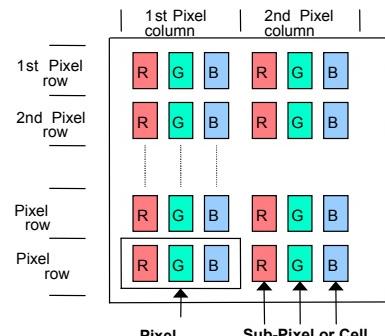


2) Test results are satisfied with each full red, green, blue, black and white test pattern.

- Specifically, The full white test pattern is used to decide the number of continuous cell defects, The full black test pattern is used to decide the number of Non-extinguishing cell defects.
- The decision distance is 2.2m (3H, 60") away from the panel, intensity of illumination is between 100 Lux and 200 Lux.

3) Cell defects do not increase or progress as time goes on.

PDP CELL DISPLAY AND DEFECT ZONES Display Dot Diagram



Plasma Cell Defect Form

Visual Problems

| | | | | | |
|---------------|------|------|------|------|------|
| (01) | (02) | (03) | (04) | (05) | (06) |
| A-Zone | → | | | | |
| (16) | (A) | (B) | (C) | (D) | (07) |
| | | | | | |
| (15) | (E) | (F) | (G) | (H) | (08) |
| B-Zone | → | | | | |
| (14) | (13) | (12) | (11) | (10) | (09) |

Fax to:

LG Tech Support

Fax #: 256.774.4051

Email: techsupport@lge.com

Description:Non-Extinguishing PixelsPixel that remains on/ illuminating
the Sub-pixel Red/ Blue/ Green.Non-Illuminating PixelsPixel that remains off/ not illuminating
the Sub-pixel Red/ Blue/ Green.

Model Number : _____ Serial Number : _____ Servicer Acct : _____

Customer's Name : _____ Date of Purchase: _____ RA# : _____

A-Zone (A -H) Cell Defects Location(s) Quantity

Non-Extinguishing Pixels

(Red) _____ (Blue) _____
(Blue) _____ (Green) _____

Flickering Pixels or Non-Illuminating Pixels

(Red) _____ (Blue) _____
(Blue) _____ (Green) _____**B-Zone (1 -16) Cell Defects** Location(s) Quantity

Non-Extinguishing Pixels

(Red) _____ (Blue) _____
(Blue) _____ (Green) _____

Flickering Pixels or Non-Illuminating Pixels

(Red) _____ (Blue) _____
(Blue) _____ (Green) _____

Definition of cell defect

Panel Testing

| Div. | 42" | | 50" | | 60" | |
|-----------------------------------|---|--|--|---|---|---|
| Zone | A - Zone | B - Zone | A - Zone | B - Zone | A – Zone | B – Zone |
| Non ignition Dot And Unstable Dot | * N≤3 [Cells / RGB screen] Total N≤9 [Cell/ full screen] *2cell conjunction point: N≤ 0 *include Unstable dot: N ≤ 4 | * N≤5 [Cells / RGB screen] Total N≤15 [Cell/ full screen] *2cell conjunction point: N≤ 2*3cell conjunction point: N = 0 *Unstable dot: N≤ 7 | *N≤ [Cells / RGB screen] Total N≤ 4 [Cell/full screen] *2cell conjunction point: N≤*3cell conjunction point: N = 0 Unstable dot: N≤ | * N≤ [Cells / RGB screen] Total N≤11 [Cell/ full screen] *1cell conjunction point: N≤*3cell conjunction point: N = 0 *Unstable dot: N≤ | * N≤11 [Cells / RGB screen] Total N≤33 [Cell/ full screen] *2cell conjunction point: N≤2*3cell conjunction point: N = 0 *Unstable dot: N≤ 11 | * N≤12 [Cells / RGB screen] Total N≤36 [Cell/ full screen] *2cell conjunction point: N≤2*3cell conjunction point: N = 0 *Unstable dot: N≤ 12 |
| Uncontrollable Dot | N=0 | N≤2 [Cells/ RGB screen] Total N≤6 [Cells / full screen] | N=2 | N≤3 [Cells / RGB screen] Total N≤ [Cells / full screen] | N 2 [Cells / RGB screen] Total N6 [Cells / full screen] | N 3 [Cells / RGB screen] Total N9 [Cells / full screen] |
| Non extinguishing Dot | N=0 | N=0 | N=0 | N=0 | N = 0 | N = 0 |
| Defect distance | 50mm ≤ | | 50mm ≤ | | D ≥5cm, N 1 (D: Centimeter) ; however, including conjunction cell, N = 0 | |
| Total Defect | N ≤ 25 [Cell/ full screen] | | N ≤ 25 [Cell/ full screen] | | N ≤ 35 [Cell/ full screen] | |
| Stain | *1≤D≤5, N≤3 *D>5, N=0 | | * 1≤D≤5, N≤3 * D>5, N=0 | | * 1<D≤5, N ≤ 3 (Stain Distance:≥50 mm) * D>5, N = 0 (Stain Distance:≥50mm) | |

